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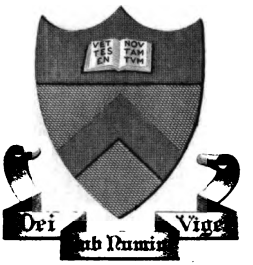

Princeton University.

Presented by

Rutgers College

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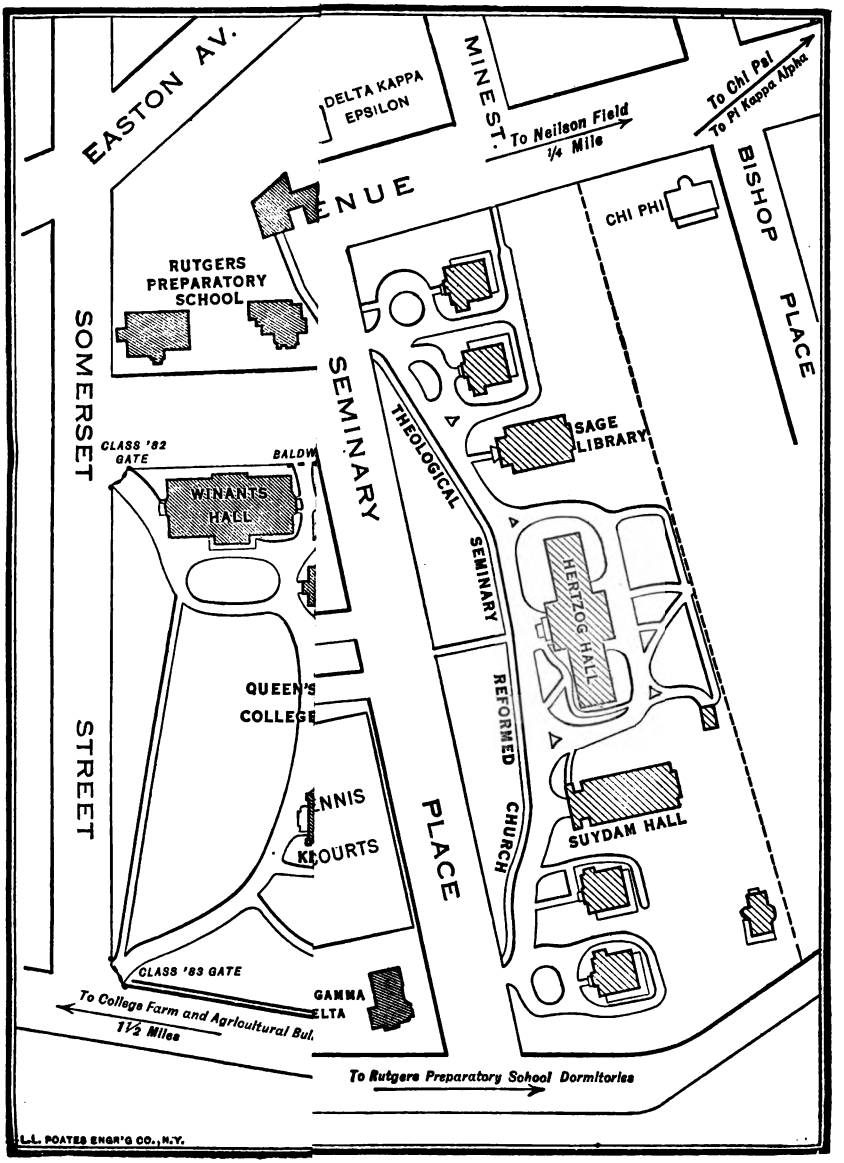

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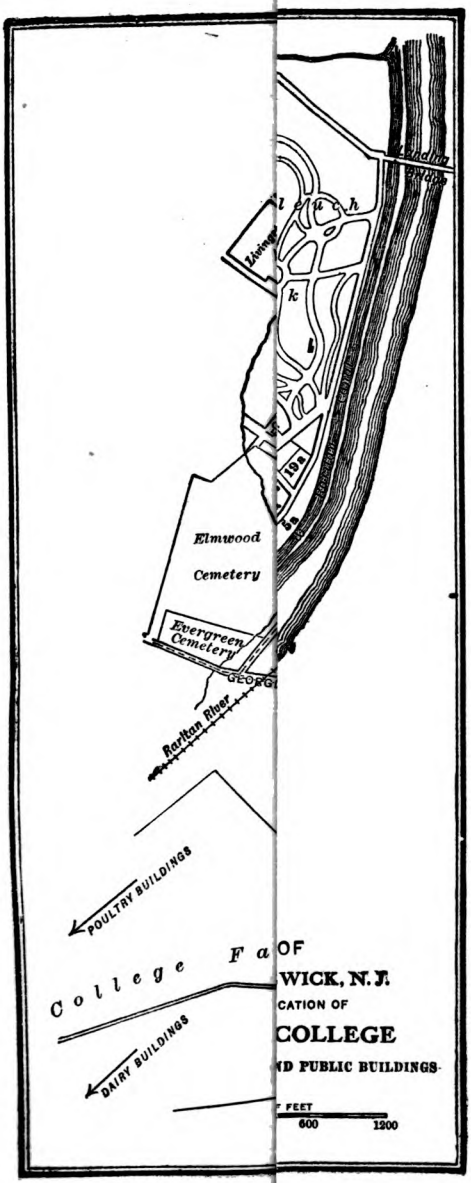

RUTGERS COLLEGE

1 Queen's Campus
2, 3 Neilson Campus
4 Neilson Athletic Field
5, 5 College Field
5a College Park

At the College Farm:

A, A Agricultural Buildings
B Barns and Stables
D Director's House
G, G Greenhouses
M Machinery Building
P Poultry Building

Students' Houses:

6 Delta Phi
7 Zeta Psi
8 Delta Upsilon
9 Delta Kappa Epsilon
10 Chi Phi
11 Beta Theta Pi
12 Chi Psi
13 Pi Kappa Alpha
14 Lambda Chi Alpha
15 Phi Gamma Delta
16 Ivy Club
17 Kappa Sigma

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18 Theological Seminary of the Reformed Church
19 Rutgers Prep. School
19a, 19a Rutgers Prep. School Dormitories
20 Public Library
21 Middlesex County Buildings
* Churches
C Children's Homes
H Hospitals
PO Post Office
R Railway Stations
S Public Schools
– – – Street Car Lines

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Rutgers College

CHARTERED 1766 AS QUEEN'S COLLEGE

AND THE

STATE UNIVERSITY OF NEW JERSEY

Catalog for 1919–1920

NEW BRUNSWICK : NEW JERSEY

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Corporate Title

"The Trustees of Rutgers College in New Jersey"

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FOREWORD

The present annual *Catalog* gives full description of the work of Rutgers College and essential information concerning all activities of the State University of New Jersey, together with the complete register of officers, instructors, and students. More detailed statements regarding certain departments are furnished by other publications:

For the *Catalog of the New Jersey College for Women*, apply to the Registrar of the College for Women.

For the *Announcement of Short Winter Courses in Agriculture*, apply to the Director of the Short Courses in Agriculture.

For the *Announcement of Summer Session Courses*, apply to the Director of the Summer Session.

For the *Announcement of University Extension Courses*, apply to the Director of the University Extension Department.

Bulletins and circulars giving information on various farm subjects are published for free distribution by the Agricultural Experiment Stations and the division of Agricultural Extension. A list of these publications may be obtained from the Director of the Agricultural Experiment Stations.

The Registrar of Rutgers College will send on request copies of the present *Catalog* or any of the following: A condensed circular of information relative to Rutgers College, an illustrated pamphlet descriptive of the College, an engineering pamphlet, an announcement of the short course in ceramics, a circular containing the announcement of prize subjects.

The Registrar's office also furnishes the *General Catalog* of the Trustees, members of the Faculty, and students since 1766, and has on sale the *Rutgers 150th Anniversary Book*.

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COLLEGE CALENDAR

Academic Year 1919-1920

Sept.	*11*	*Thursday*	Beginning Thursday 9 a. m.
Sept.	*12*	*Friday*	Examinations for admission
Sept.	*'13*	*Saturday*	Examinations for removal of deficiencies
Sept.	*16*	*Tuesday*	Registration Day
Sept.	*17*	*Wednesday*	First term begins 8 a. m.
Oct.	*10*	*Friday*	Meeting of the Board of Trustees 2 p. m.
Nov.	*4*	*Tuesday*	Election Day
Nov.	*10*	*Monday*	Charter Day
Nov.	*26*	*Wednesday*	Thanksgiving recess begins 12 m.
Dec.	*1*	*Monday*	Thanksgiving recess ends 8 a. m.
Dec.	*20*	*Saturday*	Christmas recess begins 12 m.
Jan.	*5*	*Monday*	Christmas recess ends 8 a. m.
Jan.	*13*	*Tuesday*	Meeting of the Board of Trustees 2 p. m.
Jan.	*22*	*Thursday*	First term examinations begin
Jan.	*25*	*Sunday*	Day of Prayer for Colleges
Jan.	*31*	*Saturday*	First term examinations end
Feb.	*1*	*Sunday*	Second term begins
Feb.	*2*	*Monday*	Last day for submitting subjects of theses
Feb.	*22*	*Sunday*	Washington's Birthday
Mar.	*31*	*Wednesday*	Spring recess begins 4 p. m.
Apr.	*7*	*Wednesday*	Spring recess ends 8 a. m.
Apr.	*9*	*Friday*	Meeting of the Board of Trustees 2 p. m.
May	*21*	*Friday*	Exhibition Drill
May	*25*	*Tuesday*	Drawing for dormitory rooms 4 p. m.
May	*27*	*Thursday*	Senior examinations begin
May	*28*	*Friday*	Last day for submitting graduation theses
May	*30*	*Sunday*	Memorial Day
June	*3*	*Thursday*	Examinations of lower classes begin
June	*3*	*Thursday*	Competitive examinations in each county of New Jersey for State Scholarships
June	*4*	*Friday*	
June	*5*	*Saturday*	
June	*5*	*Saturday*	Senior examinations end
June	*12*	*Saturday*	Examinations of lower classes end
June	*13*	*Sunday*	Baccalaureate Sermon 7.30 p. m.

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June 14 Monday	Junior Orations
June 15 Tuesday	Meeting of the Board of Trustees 9.30 a. m. Annual meeting of the Alumni 10.30 a. m. 154th Annual Commencement 11.30 a. m. Alumni Dinner 1.30 p. m.
June 21 Monday to June 26 Saturday	Examinations of the College Entrance Examination Board

Academic Year 1920-1921

Sept. 16 Thursday	Beginning Thursday 9 a. m.
Sept. 17 Friday	Examinations for admission
Sept. 18 Saturday	Examinations for removal of deficiencies
Sept. 21 Tuesday	Registration Day
Sept. 22 Wednesday	First term begins 8 a. m.
Oct. 8 Friday	Meeting of the Board of Trustees 2 p. m.
Nov. 2 Tuesday	Election Day
Nov. 10 Wednesday	Charter Day
Nov. 24 Wednesday	Thanksgiving recess begins 12 m.
Nov. 29 Monday	Thanksgiving recess ends 8 a. m.
Dec. 22 Wednesday	Christmas recess begins 4 p. m.
Jan. 4 Tuesday	Christmas recess ends 8 a. m.
Jan. 11 Tuesday	Meeting of the Board of Trustees 2 p. m.
Jan. 20 Thursday	First term examinations begin
Jan. 29 Saturday	First term examinations end
Jan. 30 Sunday	Second term begins
Jan. 30 Sunday	Day of Prayer for Colleges
Feb. 22 Tuesday	Washington's Birthday
Mar. 23 Wednesday	Spring recess begins 4 p. m.
Mar. 30 Wednesday	Spring recess ends 8 a. m.
Apr. 8 Friday	Meeting of the Board of Trustees 2 p. m.
May 20 Friday	Exhibition Drill
May 26 Thursday	Senior examinations begin
May 30 Monday	Memorial Day
June 2 Thursday	Examinations of lower classes begin
June 14 Tuesday	155th Annual Commencement

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BOARD OF TRUSTEES

EX OFFICIO

His Excellency William N. Runyon, A.M. — Trenton
Governor of the State of New Jersey

Hon. William S. Gummere, LL.D. — Newark
Chief Justice of the State of New Jersey

Hon. Thomas F. McCran, LL.D. — Trenton
Attorney-General of the State of New Jersey

BY ELECTION

	Date of Election
Rev. Wm. H. S. Demarest, D.D., LL.D. *President of the College*	March 7, 1899
Tunis G. Bergen, Ph.D. Brooklyn, N.Y.	June 19, 1883
Frederick Frelinghuysen, A.M., LL.D. Newark	June 16, 1885
James Neilson, A.M., LL.B. New Brunswick	June 22, 1886
Frederick J. Collier, A.M. Hudson, N. Y.	June 16, 1891
Paul Cook, A.M. Troy, N. Y.	June 16, 1891
William H. Leupp, A.M. New Brunswick	June 18, 1895
Rev. J. Preston Searle, D.D. New Brunswick	June 21, 1898

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	Date of Election
JOHN W. HERBERT, JR., M.Sc., LL.B. Helmetta	June 19, 1901
HON. WILLIAM H. VREDENBURGH, LL.D. Freehold	March 4, 1902
HON. FOSTER M. VOORHEES, LL.D. Elizabeth	October 28, 1902
HON. ALPHONSO T. CLEARWATER, LL.D. Kingston, N. Y.	January 14, 1904
HOWARD N. FULLER, A.M. Albany, N. Y.	January 12, 1905
REV. JOSEPH R. DURYEE, D.D. New York, N. Y.	March 7, 1905
PHILIP M. BRETT, A.B., LL.B New York, N. Y.	January 11, 1906
CHARLES L. EDGAR, E.E. Boston, Mass.	October 12, 1906
W. EDWIN FLORANCE, A.M. New Brunswick	October 12, 1906
DRURY W. COOPER, A.B., LL.B. Montclair	October 9, 1908
REV. WILLIAM I. CHAMBERLAIN, D.D. New York, N. Y.	October 8, 1909
LEONOR F. LOREE, LL.D. New York, N. Y.	October 8, 1909
DUNCAN D. SUTPHEN, A.B. New York, N. Y.	October 8, 1909
REV. HENRY EVERTSON COBB, D.D. New York, N. Y.	October 13, 1911

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	Date of Election
Rev. William Bancroft Hill, D.D. Poughkeepsie, N. Y.	January 9, 1912
William Shields Myers, D.Sc. New York, N. Y.	April 12, 1912
Hon. Alfred F. Skinner, A.B. Newark	April 11, 1913
Rev. John Howard Raven, D.D. New Brunswick	January 13, 1914
Otto Hermann Kahn, LL.D. Morristown	April 17, 1914
Alan Hartwell Strong, LL.D. New Brunswick	June 16, 1914
Holmes Van Mater Dennis, Jr., A.M., LL.B. New Brunswick	June 15, 1915
John Wyckoff Mettler, M.Sc., LL.B. Millstone	January 11, 1916
Ernest R. Ackerman, Esq. Plainfield	November 24, 1916
Hon. Joseph S. Frelinghuysen, A.M. Raritan	April 13, 1917
Louis W. Stotesbury, M.Sc. New York, N. Y.	June 12, 1917
John Van Nostrand Dorr, E.M. New York, N. Y.	October 12, 1918
William P. Hardenbergh, Esq. Bernardsville	January 14, 1919
Haley Fiske, A.M. New York, N. Y.	June 10, 1919
George H. Blakeley, C.E. South Bethlehem, Pa.	October 10, 1919

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OFFICERS OF THE BOARD

REV. J. PRESTON SEARLE, D.D. — New Brunswick
Secretary

HENRY PARSELL SCHNEEWEISS, A.B. — New Brunswick
Treasurer

STATED MEETINGS OF THE BOARD

Second Friday in October, second Tuesday in January and second Friday in April at 2 p. m.; Commencement day at 9.30 a. m.

STANDING COMMITTEES OF THE BOARD

FINANCE—Messrs. F. Frelinghuysen, Herbert, Leupp, Loree, Neilson

INSTRUCTION AND DISCIPLINE—Messrs. Bergen, Chamberlain, Cobb, Hill, Sutphen

FARM, EXPERIMENT STATION, AND CERAMICS—Messrs. Leupp, Cook, J. S. Frelinghuysen, Myers, Neilson

PREPARATORY SCHOOL—Messrs. Dennis, Brett, Dorr, Raven, Stotesbury

BUILDINGS AND GROUNDS—Messrs. Florance, Hardenbergh, Loree, Mettler, Strong

LIBRARY—Messrs. Clearwater, Ackerman, Fiske, Kahn, Voorhees

HONORARY DEGREES—Messrs. Chamberlain, Brett, Cobb, Edgar, Skinner

TRUSTEES—Messrs. Duryee, F. Frelinghuysen, Fuller, Searle, Sutphen

BENEFICIARY TRUSTS—Messrs. Searle, Collier, Duryee, Raven, Vredenburgh

ADVISORY—Messrs. Florance, F. Frelinghuysen, Mettler, Searle, Skinner

COLLEGE FOR WOMEN—Messrs. J. S. Frelinghuysen, Loree, Neilson, Skinner

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BOARD OF VISITORS OF THE STATE COLLEGE

AND OF THE

STATE UNIVERSITY OF NEW JERSEY

Atlantic County	William A. Blair	Elwood
Bergen County	Arthur Lozier	Ridgewood
Burlington County	R. R. Lippincott	Vincentown
Camden County	Ephraim T. Gill	Haddonfield
Cape May County	Charles Vanaman	Dias Creek
Cumberland County	Charles F. Seabrook	Bridgeton
Essex County	Zenos G. Crane	Caldwell
Gloucester County	Wilbur Beckett	Swedesboro
Hudson County	Diedrich Bahrenburg	Union Hill
Hunterdon County	Egbert T. Bush	Stockton
Mercer County	Josiah T. Allinson	Yardville
Middlesex County	James Neilson	New Brunswick
Monmouth County	William H. Reid	Tennent
Morris County	John C. Welsh	German Valley
Ocean County	James E. Otis	Tuckerton
Passaic County	Isaac A. Serven	Clifton
Salem County	Charles R. Hires	Salem
Somerset County	Joseph Larocque	Bernardsville
Sussex County	Robert V. Armstrong	Augusta
Union County	John Z. Hatfield	Scotch Plains
Warren County	James I. Cooke	Delaware

James Neilson, *President*
Egbert T. Bush, *Vice-President*
Irving E. Quackenboss, *Secretary and Treasurer*

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FACULTY

WILLIAM H. S. DEMAREST, *President* — Seminary Place
A.B., A.M., D.D. (Rutgers); LL.D. (Columbia, Union, Pittsburgh)

FRANCIS CUYLER VAN DYCK — 25 Grant Avenue
A.B., A.M. (Rutgers); Ph.D. (Union); D.Sc., LL.D. (Rutgers)
Emeritus Professor of Physics and Experimental Mechanics

AUSTIN SCOTT — 24 Livingston Avenue
A.B. (Yale); A.M. (Univ. Mich); Ph.D. (Leipsic); LL.D. (Princeton, Rutgers)
Voorhees Professor of History and Political Science

LOUIS BEVIER — Bishop Place
A.B., A.M. (Rutgers); Ph.D. (Johns Hopkins); Litt.D. (Rutgers)
Professor of the Greek Language and Literature

ALFRED ALEXANDER TITSWORTH — 590 George Street
B.Sc., M.Sc., C.E., D.Sc. (Rutgers)
Professor of Civil Engineering

JOHN CHARLES VAN DYKE — 564 George Street
L.H.D. (Rutgers)
Professor of the History of Art

ELIOT ROBERTSON PAYSON — 116 College Avenue
A.B., A.M. (Hamilton); Ph.D. (Rutgers)
Professor of the History of Education
Associate Professor of the German Language and Literature

WILLIAM HAMILTON KIRK — 190 College Avenue
A.B., Ph.D. (Johns Hopkins)
Professor of the Latin Language and Literature

JOSEPH VOLNEY LEWIS — 35 College Avenue
B.E. (Univ. N. C.); S.B. in Geol. (Harvard)
Professor of Geology and Mineralogy
Director of the Geological Museum

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EDWIN BELL DAVIS 145 College Avenue
B.L. (Dartmouth); A.M. (Rutgers); Officier d'Académie
Professor of Romance Languages

WALTER RUSSELL NEWTON 39 College Avenue
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Professor of the German Language and Literature

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Emeritus Professor of Ethics and Evidences of Christianity

RALPH GARRIGUE WRIGHT Bishop Place
B.S. (Columbia); Ph.D. (Basle)
Professor of Chemistry

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Director of the Ballantine Gymnasium

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Professor of Physiology

GEORGE HERBERT BROWN 69 South Adelaide Avenue
Cer. Eng. (Ohio State Univ.)
Professor of Ceramics
Director of Department of Clay-Working and Ceramics

* On leave of absence 1919-1920.
† Resigned October 31, 1919.

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Hill Professor of the English Bible

OTIS AMSDEN GAGE 127 North Sixth Avenue
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Professor of Physics

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Professor of Military Science and Tactics

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Assistant in Military Science and Tactics

REINHOLD CARL KRASOWSKI Newark
Sergeant of Infantry, U. S. Army (lately Captain U. S. A.)
Assistant in Military Science and Tactics

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FREDERICK BENJAMIN HEITKAMP, LITT. B. — Alumni and Faculty House.
Alumni Field Secretary
Graduate Manager of Athletics

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STANDING COMMITTEES OF THE FACULTY

The President is *ex officio* a member of all committees. The member first named in each instance is chairman.

ADMINISTRATION—The President, The Dean, Professors Titsworth, J. V. Lewis, Lipman

ALUMNI RELATIONS—Professors Morris, Pratt, Stephenson

CATALOG—Professors Billetdoux, Whitman, Brasefield

CHAPEL—Professors Newton, Lendall, Hale

COURSES AND EXAMINATIONS—Professors Kirk, Bevier, Heck, Lipman, Gage

DORMITORIES—Professors de Regt, Hale, Martin

EMPLOYMENT OF STUDENTS—Professors Lipman, Titsworth, Brown

EXTENSION WORK—Professors Elliott, Kull, F. G. Helyar

GRADUATE DEGREES—Professors Scott, J. V. Lewis, Marvin

GYMNASIUM—Professors Greacen, Fales, Devan

LIBRARY—Professors Marvin, Wright, Moore

MILITARY DEPARTMENT—Professors Scott, Twiss, Little

PREPARATORY SCHOOLS—Professors Davis, E. R. Payson, Garretson

PRESS—Professors Thompson, J. P. Helyar, Kimball

PRIZES—Professors Titsworth, Hauch, Mr. Osborn

PROPERTY—Professors Stephenson, Headlee, Farley

SCHOLARSHIPS—Professors Bevier, Cook, Moore

STUDENT ORGANIZATIONS—Professors Bevier, Blake, Couch

WOMEN'S COLLEGE—Professors Bevier, Van Dyke, Marvin, Lipman, Elliott

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ORGANIZATION

RUTGERS COLLEGE was founded as Queen's College November 10, 1766. It was the eighth college founded in the American colonies and had its origin in the zeal for education and religion shown by the Dutch colonists in New York and New Jersey. Early in the eighteenth century the Reverend Theodorus Jacobus Frelinghuysen, distinguished pastor and evangelist, urged the erection of such a college. His son, the Reverend Theodorus Frelinghuysen, continued the effort, persistently seeking the necessary sympathy and resources both in this country and Holland. As the movement came to successful issue the Reverend Jacob Rutsen Hardenbergh, afterwards president of the College, was the leader. With each of these ministers Hendrick Fisher, president of the first Provincial Congress of New Jersey, was the layman most actively associated.

The charter was granted in the name of George the Third by His Excellency William Franklin, Governor of the Province of New Jersey. No copy of this document is now known to be in existence, but under its provisions the Board of Trustees was created and meetings were called. A second charter was granted March 20, 1770, in answer to the Trustees' desire for slight amendment, and under its provisions, almost unchanged, the institution has continued until now. It provides for a college to be called Queen's College in honor of the royal consort, Charlotte, and to be erected for "the education of youth in the learned languages, liberal and useful arts and sciences, and especially in divinity." The college was located by the Trustees at New Brunswick, New Jersey, where it has occupied successively three sites.

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During the Revolutionary War its activities were at different times removed to neighboring villages and the tutors in charge, Colonel Frederick Frelinghuysen and Colonel John Taylor, were frequently called away for the civil and military service which they so patriotically and conspicuously fulfilled. In 1808 the present campus was acquired and the erection of the college hall, still called Queen's Building, was begun.

In 1825, after receiving generous gifts from Colonel Henry Rutgers of New York and in recognition of his widespread benevolent donations, the Trustees secured amendment of the charter changing the name from Queen's to Rutgers College. From that time Rutgers College has maintained a continuous work of liberal education, increasing from time to time its corps of professors and instructors, its buildings and equipment, its number of students and graduates. The course of study maintained from the origin of the College has been a classical or liberal arts course leading to the degree of Bachelor of Arts (A.B.). In 1864 the Trustees organized a course of study leading to the degree of Bachelor of Science (B.Sc.) and on April 4 of that year the State of New Jersey declared "The Trustees of Rutgers College in New Jersey, maintaining Rutgers Scientific School," to be "The State College for the Benefit of Agriculture and the Mechanic Arts." On March 15, 1917, the Legislature designated this institution also as the State University of New Jersey. Since 1901 a course of study leading to the degree of Bachelor of Letters (Litt.B.) has also been maintained. Courses of graduate study leading to advanced degrees have been organized in several departments. "The New Jersey College for Women" was established by the Trustees April 12, 1918.

The corporate title of the College is "The Trustees of Rutgers College in New Jersey."

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REQUIREMENTS FOR ADMISSION

EVERY applicant for admission must submit to the President proper testimonials of a good moral character. An applicant for a State scholarship must also submit a certificate of appointment.

The requirements for admission to any of the four-year courses amount to 15 points, a "point" representing "a year's study in any subject in a secondary school, constituting approximately a quarter of a full year's work." The specific requirements for the various courses are shown in the table below and are described in detail in the following pages:

Liberal Courses

English	3
Elementary and Intermediate Algebra	2
Plane Geometry	1
Foreign Language	3
	9
Additional	6
	15

Technical Bachelor of Science in Agriculture

English	3
Elementary and Intermediate Algebra	2
Plane Geometry	1
Foreign Language	2
	8
Additional	7
	15

Technical Bachelor of Science in Biology

English	3
Elementary and Intermediate Algebra	2
Plane Geometry	1
Solid Geometry	½
Foreign Language	2
	8½
Additional	6½
	15

Technical Bachelor of Science in Chemistry or Ceramics, in Civil, Electrical, or Mechanical Engineering

English	3
Elementary and Intermediate Algebra	2
Plane Geometry	1
Solid Geometry	½
Plane Trigonometry	½
Foreign Language	2
	9
Additional	6
	15

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The additional units may be offered in history, one to four years; science, one to four years; foreign languages, one to four years. Draughting will be counted for admission to the technical courses with a maximum allowance of one point. Solid geometry and plane trigonometry will be counted for admission to the technical course in Agriculture; plane trigonometry, for admission to the technical course in Biology. With the approval of the Committee on Administration, subjects not on the regular list, but included in the curriculum of an approved school, may be presented and will be accepted for a maximum of two units, provided (1) that the candidate is a graduate of the school in a four-year course, and (2) that the work is certified as of high quality.

The following rules govern the distribution of units in the foreign languages:

1. The foreign languages regularly accepted are Latin, Greek, French, German, and Spanish, from two to four points in any one.

2. For the liberal courses three to six points may be offered, that is, three and three, three and two, two and two in two languages; or three or four points in one language.

3. For the technical courses, two to six points may be offered, that is, three and three, three and two, two and two in two languages; or two, three, or four points in one language.

A candidate for admission by examination must pass successfully in at least thirteen points. If these include all the prescribed subjects for admission to the course selected, he may offer two points in addition under the regular rules applying to the entrance by certificate. No such candidate may be admitted with deficiencies of more than two points.

A candidate for admission by certificate must be a graduate of a four-year course in an approved secondary school, and must offer at least thirteen points in the list of

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subjects specified above. The two additional points may be offered in subjects not listed under the general rule stated above, or may be passed off in the September entrance examinations. Candidates for entrance by certificate will not be admitted with deficiencies.

REQUIREMENTS IN ENGLISH

All Courses Required

The requirements adopted by the National Conference on Uniform Entrance Requirements in English are in force for admission to all courses and are equated as three points.

Preparation in English has two main objects: (1) command of correct and clear English, spoken and written; (2) ability to read with accuracy, intelligence, and appreciation and the development of the habit of reading good literature with enjoyment.

Grammar and Composition

The first object requires instruction in grammar and composition. English grammar should ordinarily be reviewed in the secondary school, and correct spelling and grammatical accuracy should be rigorously exacted in connection with all written work during the four years. The principles of English composition governing punctuation, the use of words, paragraphs, and the different kinds of whole composition, including letter-writing, should be thoroughly mastered; and practice in composition, oral as well as written, should extend throughout the secondary school period. Written exercises may well comprise narration, description, and easy exposition and argument based upon simple outlines. It is advisable that subjects for this work be taken from the student's personal experience, general knowledge, and studies other than English, as well as from his reading and from literature. Finally, special instruction in language and composition should be accompanied by concerted effort of teachers in all branches to cultivate in the student the habit of using good English in his recitations and various exercises, whether oral or written.

Literature

The second object is sought by means of the reading and study of a number of books from which may be framed a progressive course

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in literature. The student should be trained in reading aloud and should be encouraged to commit to memory notable passages both in verse and in prose. As an aid to literary appreciation he is further advised to acquaint himself with the most important facts in the lives of the authors whose works he reads and with their place in literary history. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of what he reads.

A few of these books should be read with special care, greater stress being laid upon form and style, the exact meaning of words and phrases, and the understanding of allusions.

Examination

However accurate in subject-matter, no paper will be considered satisfactory if seriously defective in punctuation, spelling, or other essentials of good usage.

Grammar and Composition.—In grammar and composition, the candidate may be asked specific questions upon the practical essentials of these studies, such as the relation of the various parts of a sentence to one another, and those good usages of modern English which one should know in distinction from current errors. The main test in composition will consist of one or more essays developing a theme through several paragraphs; the subjects will be drawn from the books read, from the candidate's other studies, and from his personal knowledge and experience quite apart from reading. For this purpose the examiner will provide several subjects, perhaps eight or ten, from which the candidate may make his own selections. He will not be expected to write more than four hundred words an hour.

Literature.—The examination will include:

(*a*) Questions designed to test such knowledge and appreciation of literature as may be gained by an intelligent reading of the books given in List (*A*) below.

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(*b*) A test on the books in List (*B*) below. This will consist of questions upon their content, form, and structure, and upon the meaning of such words, phrases, and allusions as may be necessary to an understanding of the works and an appreciation of their salient qualities of style. General questions may also be asked concerning the lives of the authors, their other works, and the periods of literary history to which they belong.

Division of Examination.—When parts (*a*) and (*b*) of the examination are taken at different times, each will include a test in grammar and composition.

List of Books, 1920-1922

(*A*) BOOKS FOR READING.—The books provided for reading are arranged in the following groups, from each of which two selections are to be made, except that for any book of Group I a book from any other may be substituted.

GROUP I. CLASSICS IN TRANSLATION.—The *Old Testament*, at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther; the *Odyssey*, with the omission, if desired, of Books I–V, XV, and XVI; the *Aeneid*. The *Odyssey* and the *Aeneid* should be read in English translations of recognized literary excellence.

GROUP II. DRAMA.—Shakespeare, *Merchant of Venice, As You Like It, Julius Caesar.*

GROUP III. PROSE FICTION.—Dickens, *A Tale of Two Cities;* George Eliot, *Silas Marner;* Scott, *Quentin Durward;* Hawthorne, *The House of the Seven Gables.*

GROUP IV. ESSAYS, BIOGRAPHY, ETC.—Addison and Steele, *The Sir Roger de Coverley Papers;* Irving, *The Sketch Book*—selections covering about 175 pages; Macaulay, *Lord Clive;* Parkman, *The Oregon Trail.*

GROUP V. POETRY.—Tennyson, *The Coming of Arthur, Gareth and Lynette, Lancelot and Elaine, The Passing of Arthur;* Browning, *Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to Aix, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, Hervé Riel, Pheidippides, My Last Duchess, Up at a Villa—Down in the City, The Italian in England,*

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The Patriot, The Pied Piper, "De Gustibus," Instans Tyrannus; Scott, *The Lady of the Lake;* Coleridge, *The Ancient Mariner;* and Arnold, *Sohrab and Rustum.*

(*B*) BOOKS FOR STUDY.—The books provided for study are arranged in four groups, from each of which one selection is to be made.

GROUP I. DRAMA.—Shakespeare: *Macbeth* or *Hamlet.*

GROUP II. POETRY.—Milton, *L'Allegro, Il Penseroso, Comus;* Book IV of Palgrave's *Golden Treasury* (*First Series*), with special attention to Wordsworth, Keats, and Shelley.

GROUP III. ORATORY.—Burke, *Speech on Conciliation with America;* Washington, *Farewell Address;* Webster, *First Bunker Hill Oration;* and Lincoln, *Gettysburg Address.*

GROUP IV. ESSAYS.—Macaulay, *Life of Johnson;* Carlyle, *Essay on Burns,* with a selection from Burns's *Poems.*

REQUIREMENTS IN GREEK

For admission to the Bachelor of Arts course three points in Greek may be offered, as follows:

A, B (First Two Years)

Grammar

Accent, inflections, and syntax.

Composition

Translation into Greek of easy English sentences based on the vocabulary of Xenophon. Special attention to correctness of accent.

Xenophon

Anabasis, four books.

C (Third Year)

Homer

Iliad, three books (omitting the catalog of the ships), or *Odyssey,* three books. Particular care should be given to scansion.

Sight Reading

Students should be practiced in reading at sight narrative prose not more difficult than the *Anabasis* of Xenophon.

These statements indicate the amount of work presupposed by the entrance examinations, but equivalents from authors not mentioned will be accepted.

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REQUIREMENTS IN HISTORY

For admission to any of the courses one to four points in history may be offered.

The following courses are equated as one point each: (*a*) ancient history; (*b*) English history; (*c*) medieval and modern history; (*d*) United States history and civics.

(*a*) *Ancient History*

The examination usually includes eight questions on Greek and Roman history (considered together), one on the oriental nations, and one on the period between the fall of the Western Empire and the year 800 A. D. The applicant should know the main facts of the political, social, religious, and colonial history, and also the physical features of the several lands, and be able to point out on an outline map the divisions of ancient Greece and Rome, the location of the chief cities, islands, etc.

(*b*) *English History*

The entire scope of English history is covered by the examination. Attention should be given to the rise of the middle class, to the relations of England with other countries, to the more prominent features of constitutional progress, to the religious history of the country, and to commerce and colonization.

(*c*) *Medieval and Modern History*

The examination is on the main facts of the history of Western Europe from the time of Charlemagne to the present. Such topics as the following should receive attention; the beginnings of the separate nations; the social, political, and cultural importance of the church; the relations between church and state through the centuries; the main features of the development of the several states; and the relations between the various states.

(*d*) *United States History and Civics*

Candidates must have a fair general knowledge of the entire field of our history, including the colonization and government of the several colonies, the machinery of federal, state, and local governments, the various steps in the territorial, social, and political growth of the nation till the end of the nineteenth century.

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REQUIREMENTS IN LATIN

For admission to any of the courses two, three, or four years of Latin may be offered.

The reading of the four-year course should be equal in amount to four books of Caesar's *Gallic War*, six orations of Cicero, and six books of Virgil's *Aeneid*. The texts prescribed for reading are: Cicero's third and fourth *Orations against Catiline* and Virgil's *Aeneid*, Books III and IV. The works from which the remainder of the reading may be selected are Caesar's *Gallic War* and *Civil War*, and the *Lives* of Nepos; Cicero's *Orations*, *Letters*, *De Senectute*, and *De Amicitia;* Sallust's *Catiline* and *Jugurthine War;* Virgil's *Bucolics*, *Georgics*, and *Aeneid;* and Ovid's *Metamorphoses*, *Fasti*, and *Tristia*.

The examinations on the reading will include sight translation of prose and poetry. The examination in Latin prose composition will contain complex sentences illustrating important constructions.

The certificate requirement in Latin prose composition is formulated as the equivalent of one period a week, during the last two years of the school course.

A, B (*First Two Years*)

Grammar, inflections and syntax; ***Composition***, sentences based on Caesar or Nepos; ***Reading***, parts of Caesar, or of Caesar and Nepos, equal in amount to four books of the ***Gallic War***.

C (*Third Year*)

Grammar, as above; ***Composition***, complex sentences based on Cicero or Sallust; ***Reading***, Cicero's third and fourth *Orations against Catiline*, and selections from Cicero or Sallust equal in amount to four orations of Cicero.

D (*Fourth Year*)

Grammar, as above; ***Composition***, as in C; ***Reading***, Virgil's ***Aeneid***, Books III and IV, and selections from Virgil or Ovid equal in amount to four books of the ***Aeneid***.

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REQUIREMENTS IN MATHEMATICS

For admission to the Bachelor of Arts, the Bachelor of Letters, and the general Bachelor of Science courses, or to the technical course in Agriculture the requirement in mathematics is three points: namely, two in algebra and one in plane geometry.

For admission to the technical Bachelor of Science courses in Engineering, Chemistry, and Ceramics four points are required: namely, algebra two, plane geometry one, solid geometry one-half, and plane trigonometry one-half. For the course in Biology, plane trigonometry is not required.

Students are advised thoroughly to review algebra within a year before entering.

All Courses, Required

Algebra A (To Quadratics)

A thorough drill in the four fundamental operations; factoring; the greatest common divisor, both by inspection and by division; least common multiple; fractions, including complex fractions; equations of the first degree containing one or more unknowns; problems leading to equations of the first degree; involution and evolution of polynomials and numbers; the theory of exponents; properties of quadratic surds, including binomial surds; rationalization of the denominator; solutions of equations containing surds and radicals.

Algebra B (Quadratics and beyond)

The theory of quadratic equations; quadratic equations of one or more unknowns, and simultaneous equations, with applications; inequalities; ratio and proportion; the binomial theorem for positive integral exponents; the graphs of first and second degree expressions; logarithms; arithmetic and geometric progressions.

Plane Geometry

The whole of plane geometry, as contained in the standard texts. Much stress should be placed on the demonstration of original exercises.

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Technical Bachelor of Science Courses, Required

Solid geometry and plane trigonometry are not required for admission to the course in Agriculture.

Plane trigonometry is not required for admission to the course in Biology.

Solid Geometry

The whole of solid geometry as contained in the standard texts, including the relations of planes and lines in space, the properties of prisms, pyramids, cylinders, and cones, and the sphere and the spherical triangle. The solution of original exercises and numerical problems is important.

Plane Trigonometry

The essentials of plane trigonometry as contained in any of the standard texts. Thorough familiarity with the functions of single, double, and half angle, together with ability to derive the formulas, is most essential. Stress should be placed on the solution of trigonometric identities, on the solution of right and oblique triangles, and on the functions of angles in the four quadrants.

REQUIREMENTS IN MODERN FOREIGN LANGUAGES

(1) FRENCH, (2) GERMAN, (3) SPANISH

Modern languages are accepted for admission to any of the courses. Not less than two nor more than four years will be credited in one language.

For the liberal courses from three to six years, and for the technical Bachelor of Science courses from two to six years, may be offered, and will be equated accordingly.

Candidates presenting more than two points in a language are advised to take the examination in two successive years.

A test of pronunciation and of ability to understand the language when spoken or dictated will be given during the first month of the term to students who have offered modern languages for admission.

The preparation required in the several languages is specified below.

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(1) REQUIREMENTS IN FRENCH

A, B (First Two Years)

Elementary grammar, including especially pronunciation, declension, the elementary rules of syntax, and translation into French (a part orally and a part in writing) of all the English exercises, and in addition the conjugation of the simple and compound tenses of the regular verbs and of all except the rarely used and the defective irregular verbs; this should be reviewed during the second year and greater attention paid to the rules of syntax governing articles, pronouns, prepositions, and the tenses and modes of verbs, and to the application of these rules to the text translated.

The grammar requirement is covered by the first part of Fraser and Squair's *French Grammar* to page 109, inclusive, and the second part from page 129 to 158, inclusive, omitting the rarely used and defective irregular verbs. Any grammar, however, may be used that fills the requirement.

From 400 to 600 pages of simple modern prose should be translated, with oral and written practice in making abstracts and reproductions of passages read. The following are suitable texts: Aldrich and Foster's *French Reader;* Kuhn's *French Reading for Beginners;* Bruno, *le Tour de la France;* Labiche et Martin, *le Voyage de monsieur Perrichon;* Halévy, *l'abbé Constantin;* Mérimée, *Colomba;* Bazin, *Contes choisis;* Daudet, *le petit Chose;* About, *le Roi des Montagnes;* Verne, *les Enfants du capitaine Grant.*

C (Third Year)

An advanced grammar should be studied, such as the second part of Fraser and Squair's, and its rules applied in the translation of English sentences into French; or for this may be substituted some treatise on syntax and composition. Aural and oral practice should be increased.

The translation should include from 400 to 600 pages of intermediate texts, one at least to be in dramatic form. The following are suitable: Balzac, *le Curé de Tours;* Chateaubriand, *le dernier Abencerage;* Molière, *le Misanthrope;* Loti, *Pêcheur d'Islande;* Bazin, *les Oberlé;* France, *le Crime de Sylvestre Bonnard;* Hugo, *Hernani.*

D (Fourth Year)

Thorough review of the grammar, with special study of modes and tenses, participles, prepositions and conjunctions. Systematic

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composition should be continued throughout the year. Readiness in understanding and in speaking French should be cultivated by abundant exercises in pronunciation, conversation, and dictation.

The reading requirement is from 600 to 900 pages of advanced texts, varied in character, including some drama and poetry. Several of the books should be studied intensively. The following are of suitable grade: Balzac, *Eugénie Grandet;* Sarcey, *le Siège de Paris;* Vigny, *Cinq-Mars;* Sand, *la petite Fadette;* Michelet, *Histoire de France;* Dumas, *la Question d'argent;* Hugo, *Ruy Blas;* Hugo, *les Misérables;* Daudet, *Tartarin de Tarascon;* Taine, *l'ancien Régime;* Bowen's *French Lyrics.*

(2) REQUIREMENTS IN GERMAN

A, B (First Two Years)

The preparation should include a thorough grounding in pronunciation, in grammatical inflections, in the principal parts and meanings of the strong and irregular verbs, in word order, and in translating brief English sentences into German. Also about 300 pages of German narrative and colloquial texts (see suggested list) should be translated into English as prepared work besides as much sight work as may be possible.

Following is a list of German texts from which selections might be made: Storm's *Immensee,* Hillern's *Höher als die Kirche,* Gerstäcker's *Germelshausen,* Baumbach's *Die Nonne,* Schiller's *Der Neffe als Onkel, Das Lied von der Glocke,* Fouqué's *Undine.*

C (Third Year)

The preparation should include the translation into English of about 300 pages of German of a degree of difficulty suggested by the following list of suitable texts from which selections might be made; Baumbach's *Der Schweigersohn,* Riehl's *Der Fluch der Schönheit* or *Burg Neideck,* Schiller's *Wilhelm Tell,* Lessing's *Minna von Barnhelm,* Goethe's *Hermann und Dorothea,* Freytag's *Die Journalisten,* Heine's *Die Harzreise,* Scheffel's *Der Trompeter von Säkkingen.*

Candidates should also have translated into German about 50 pages of connected English discourse and have had as much practice as possible throughout the year in the translation at sight of German into English.

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(3) REQUIREMENTS IN SPANISH

A, B (First Two Years)

Elementary grammar, including the principles of inflection, the regular and the most common irregular verbs, the essential rules of syntax and of word order. Careful drill in pronunciation; the system of accentuation; frequent writing from dictation. Aural practice; abundant easy exercises in both oral and written composition.

The grammar requirement is covered by Hills & Ford's *First Spanish Course* or *Part I* of Coester's *Spanish Grammar.*

From 300 to 500 pages of Spanish should be translated, with constant study of the syntax. The requirement is best fulfilled by graded selections, as, for example, Bransby's *Progressive Spanish Reader* or Hills's *Spanish Tales for Beginners*, with such texts as the following: Valera, *El Pájaro Verde;* Taboada, *Cuentos Alegres;* Alarcón, *El Capitán Veneno;* Padre Isla, *Gil Blas.*

C (Third Year)

A thorough review of the essentials of the grammar should be followed by the study of a fuller treatise on syntax, for example, *Part II* of Coester's *Spanish Grammar.* Aural and oral exercises are to be increased, with frequent practice in making abstracts and reproductions of passages read.

The reading requirement is 300 to 500 pages of intermediate texts, such as: Galdós, *Marianela;* Valdés, *José;* Alarcón, *El Sombrero de Tres Picos;* Ibáñez, *La Barraca;* Hartzenbusch, *La Coja y el Encogido.*

D (Fourth Year)

Systematic application of the rules of syntax in the writing of connected passages, using such books as Espinosa's *Advanced Spanish Composition and Conversation* and Luria's *Correspondencia Comercial.* Frequent dictation. Aural and oral practice based on texts read.

The translation should be equal in amount to 300 to 500 pages. Suitable texts are: Galdós, *Doña Perfecta;* Valdés, *La Hermana San Sulpicio;* Quintero, *Doña Clarines;* Valera, *Pepita Jiménez;* Nelson's *Spanish American Reader.*

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REQUIREMENTS IN SCIENCE

For admission to any of the courses one to four years of experimental science may be offered.

A year's experimental course in any of the following subjects is equated as one point: (*a*) physics, (*b*) chemistry, (*c*) botany, (*d*) zoology, (*e*) biology (*i. e.*, botany and zoology), (*f*) physiography.

In connection with each science offered, the candidate must submit his original laboratory note-book or the teacher's certificate specifying the amount and character of such work.

(*a*) *Physics*

Candidates are required to show satisfactory acquaintance with the prominent facts and laws of physics taught in text-books used in approved schools, familiarity with that branch of physics known as mechanics being particularly desired. The habit of taking accurate neatly written notes of laboratory work should be acquired.

(*b*) *Chemistry*

The student should have a thorough knowledge of the fundamental principles of the science as obtained through study of the metallic and nonmetallic elements accompanied by laboratory exercises.

(*c*) *Botany*

A year's study covering the equivalent of Bergen's *Foundations of Botany* or Coulter's *Plants* or *Plant Studies*, with accompanying laboratory exercises.

(*d*) *Zoology*

A year's study covering the equivalent of Hegner's *Practical Zoology* or Linville and Kelly's *General Zoology*. The course must include the equivalent of four periods of prepared class work and one double period of laboratory exercises.

(*e*) *Biology*

A half year each of botany and zoology equivalent to the courses given in Bigelow's *Applied Biology* or Hunter's *Civic Biology*. In botany a suitable equivalent is Bergen's *Foundations of Botany*

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or Coulter's *Plant Studies;* and in zoology Linville and Kelly's *General Zoology* or Hegner's *Practical Zoology.* The course must include the equivalent of four periods of prepared class work and one double period of laboratory exercises.

(*f*) *Physiography*

The candidate's preparation should consist of a year's course in physiography (physical geography), including: (1) the study of a standard secondary text-book, such as Salisbury's *Physiography, Briefer Course,* or its equivalent; and (2) field and laboratory exercises equivalent to one double period a week.

ADMISSION TO SHORT COURSES

For admission to the short course in Clay-working the requirements are the same as for the Bachelor of Science courses (page 28), except for young men who have had experience in some manufacturing branch of the ceramic industries. Such applicants are not subject to the regular entrance examinations, but are admitted if their qualifications prove satisfactory to the Director of the Department of Ceramics.

Students are admitted to the short courses in Agriculture without examination. They should have a good common-school education, however, in order to make the best use of the instruction given.

ADMISSION TO ADVANCED STUDY

Students may enter advanced classes if they sustain a satisfactory examination or offer adequate credentials to cover both the preliminary studies and those already passed over by the class which they purpose to enter. Full equivalents will be accepted.

ADMISSION TO GRADUATE STUDY

To be admitted as a graduate student the applicant must submit to the Secretary of the committee on graduate degrees testimonials of good moral character and credentials

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showing that he holds from an approved institution a baccalaureate degree in arts, letters, philosophy, or science, or an engineering degree.

Registration.—In each academic year before attending courses every graduate student must present himself at the office of the Secretary of the committee on graduate degrees and file a registration blank giving such information as may be required. This office is in Room 28, Queen's College, and is open Tuesdays, Wednesdays, and Thursdays at 12 m.

Matriculation.—To be matriculated as candidate for a graduate degree the student must secure from the Secretary of the committee the proper blank and have it filled in and signed by the instructor in charge of his major subject. The matriculation must take place at least one academic year before the candidate is admitted to final examination for the graduate degree.

A list of the graduate courses is given on page 84 and further information for graduate students on pages 166 and 224.

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MODES OF ADMISSION

EACH requirement for admission to the freshman class may be met by either examination or certificate.

ADMISSION BY EXAMINATION

The candidate for admission may meet the requirements in each subject by any of the following examinations:

1 State competitive examinations in each county in New Jersey (on June 3, 4, and 5 in 1920)
2 Examinations of the College Entrance Examination Board (June 21 to 26 in 1920)
3 Examinations of the College (September 16, 17, and 18 in 1920)
4 Examinations of the Regents of the University of the State of New York

State Competitive Examinations

Students from New Jersey will be admitted to any course upon passing the State competitive examinations, which are held annually in each county of the state on the first Thursday in June and the Friday and Saturday following under the direction of the city and county superintendents of schools. In 1920 these will be held on June 3, 4, and 5. (For the requirements of the state law see page 178.)

Entrance Examination Board

The examinations held by the College Entrance Examination Board in June of each year at various points, including Rutgers College, are accepted in so far as they meet the requirements for admission. At the College these

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examinations are held in Geological Hall. In 1920 they will take place June 21 to 26, beginning at 9 a. m.

In June, 1920, there will be separate blank forms for the "application for examination" and "certificate of recommendation." The former should be addressed to the College Entrance Examination Board, 431 West 117 Street, New York, N. Y., the latter to the Chairman of the Committee on Admission of the university, college, or scientific school that the candidate wishes to enter. Both forms may be obtained from the Secretary of the College Entrance Examination Board upon request by mail.

Provided that the application reach the College Entrance Examination Board not later than the date specified below, the examination fee will be $6.00 if the candidate is to be examined in the United States, $20.00 if the candidate is to be examined outside of the United States. The fee should be remitted by postal order, express order, or draft on New York to the College Entrance Examination Board.

Applications and fees of candidates who wish to be examined outside of the United States must reach the Secretary of the Board at least six weeks in advance of the examinations, that is, on or before May 10, 1920.

Applications and fees of candidates who wish to be examined at points in the United States west of the Mississippi River must be received at least four weeks in advance of the examinations, that is, on or before May 24, 1920.

Applications and fees of candidates who wish to be examined at points in the United States east of or on the Mississippi River must be received at least three weeks in advance of the examinations, that is, on or before May 31, 1920.

When the candidate has failed to obtain the required blank form of application for examination, the usual examination fee will be accepted if the fee arrive not later than the specified date accompanied by a memorandum containing the name and address of the candidate, the examination center at which he wishes to present himself, and a list of all subjects in which he may have occasion to take the Board's examinations.

Applications received later than the dates named will be accepted only upon payment of $6.00 in addition to the usual fee.

A list of the places at which the examinations are to be held by the Board in June, 1920, will be published about March 1. Requests that

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the examinations be held at particular points, to receive proper consideration, should be transmitted to the Secretary of the Board not later than February 1.

Examinations of the College

Examinations for admission are held by the College in September of each year. In 1920 they will take place in the Registrar's office on the Thursday, Friday, and Saturday preceding the opening of the College, September 16, 17, and 18, beginning at 9 a. m. on Thursday.

Regents' Examinations

The examinations held by the Regents of the University of the State of New York are accepted in place of entrance examinations in the subjects which they cover.

Preliminary Examinations.—It is not necessary that examinations in all the subjects required for admission be taken in the same year. Candidates may offer themselves at any of the examinations specified above within two years and four months of the date when they purpose entering college and be examined on any of the subjects required for admission.

ADMISSION BY CERTIFICATE

Graduates, of not more than twenty-eight months' standing, from a four-year or five-year course in an approved secondary school, are admitted to the freshman class upon the certificate of the principal, but only in case they can furnish at least fifteen points. No students are admitted by certificate with conditions.

All four-year secondary schools in New Jersey that are approved by the State Department of Public Instruction are accorded the certificate privilege.

Upon request of the principal or the board of education any school in other states will be investigated and, if approved by the Fac-

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ulty, will be entitled to the certificate privilege for a period of three years.

Upon application to the Registrar blank forms of certificate will be furnished to schools having this privilege.

School certificates or other credentials should be forwarded to the Registrar as early as possible.

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COURSES OF STUDY

The liberal courses lead to the degrees of

Bachelor of Arts (A.B.)
Bachelor of Letters (Litt.B.)
Bachelor of Science (B.Sc.)

Seven technical courses lead to the degree of

Bachelor of Science (B.Sc.)

In Agriculture
In Biology
In Ceramics
In Chemistry
In Civil Engineering
In Electrical Engineering
In Mechanical Engineering

Each of these courses occupies four years, the year consisting of two terms.

Graduate courses lead to the master's or the doctor's degree.

LIBERAL COURSES

The Bachelor of Arts, the Bachelor of Letters, and the general Bachelor of Science courses, called collectively the liberal courses, are intended to meet the requirements of a liberal education as a preparation for the duties of citizenship and to lay a broad foundation for the pursuit of advanced studies, whether literary, scientific, or technical. They are also designed to furnish a broad preliminary training for the professions of law, medicine, theology, teaching, and journalism.

In general character these courses are much alike. A certain amount of work in subjects of a literary, philosophic, and scientific character is required in all, both on account

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of their cultural value and as desirable preliminaries of all higher study whatever career or profession may be chosen. The Bachelor of Arts course includes either Latin, or Greek, or both. In the Bachelor of Letters course modern languages and the humanities are emphasized; in the general Bachelor of Science course, modern languages and science.

Except for the limitations imposed by these differences the same broad range of electives is offered in all three and the courses are essentially parallel. The elective studies become increasingly important as the student advances and may be so chosen as either to extend further his training in the higher branches of learning or to fit him more particularly for the pursuit of some special vocation.

TECHNICAL COURSES

The technical Bachelor of Science courses are designed to prepare for industrial positions of leadership, except the course in Biology, which is appropriate for those who intend either to study medicine or to fit themselves for professional work in sanitation or economic entomology. They are differentiated from the three liberal courses described above chiefly by a more exhaustive pursuit of scientific study and a wider range of laboratory work coupled with restricted opportunities in other departments. The prescribed studies are designed to furnish a suitable basis for the pursuit of the more specialized studies in the elective groups. These embrace not only the special branches indicated by their names (agriculture, biology, ceramics, chemistry, civil engineering, electrical engineering, and mechanical engineering), but also other subjects which aid in training intelligent men, whatever their occupation, for the wise and useful discharge of the duties of citizenship. More extended descriptions of each of these courses will be found in connection with its schedule of studies, commencing at page 59.

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GRADUATE COURSES

Courses for graduate students are offered in several departments, as exhibited by the tabulation on page 84. The work of the graduate student is of an advanced nature, consisting in great part of original research in his chosen field. These courses may lead to higher degrees (see pages 166–169). A number of fellowships have been provided which are described on pages 175–177.

SHORT COURSES

There are also several short courses, essentially practical in character, which do not lead to a degree—one in clay-working of two years, and five in agriculture of twelve weeks each. The former, known as the short course in Clay-working, is arranged especially for the benefit of clay-workers who desire to perfect themselves in their craft but who are unable to take the full course of four years. The latter, known as the short courses in Agriculture, are planned to fit men, capable in other respects, to take charge of farms, dairies, and orchards.

SUMMER SESSION

The Summer Session, established by the State of New Jersey in 1913, furnishes an extensive series of courses for teachers and college students. Teachers are afforded opportunity to pursue studies in the theory and practice of education and psychology. Intensive courses are offered in the various school subjects and special provision is made for the preparation of teachers in agriculture, manual training, household arts, drawing, science, and mathematics. In addition regular collegiate courses of standard value are given. Credit for such work is extended by Rutgers College upon the hour for hour basis.

The very rapid growth of the Summer Session has

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brought demands for extending the scope of work. The purpose is to provide a wide program of liberal and scientific courses designed not only to meet certificate requirements, but also to give teachers an opportunity to take advanced professional work and to pursue courses of regular collegiate or graduate character.

The program of studies offered in the Summer Session has been approved by the State Board of Examiners and courses satisfactorily completed are accepted by this Board in lieu of examination in subjects required for State certificates.

EXTENSION WORK

The college offers extension courses at the college and at extramural centers where sufficient demand for them appears. These are regular college courses and may be counted in partial fulfilment of the requirements for the bachelor's degree. Under an arrangement recently approved by the State Department of Public Instruction, appropriate courses also earn credit for State teachers' certificates. The college offers courses in English, education, psychology, modern languages, chemistry, and agriculture. In order to have a course offered at any center ten or more persons must register for it. The fees are those usually charged for courses of such character.

Agricultural extension work is conducted under the Smith-Lever Act of the United States Congress. Information in regard to this may be obtained from the department of agricultural extension. Lectures on various subjects by professors from the other departments of the college are also given in schools and communities desiring them.

Information concerning these lectures, the extramural courses, or the collegiate extension courses may be obtained by addressing the Chairman of the Committee on Extension Work.

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LIBERAL COURSES

In the Bachelor of Arts, the Bachelor of Letters, and the general Bachelor of Science courses somewhat more than half the studies of the freshman year are prescribed, but a very limited number in the succeeding years. There is corresponding increase in the proportion of elective studies, the freedom of choice being restricted only by minimum requirements in each group of subjects.

One essay is required in each term of the freshman, sophomore, and junior years, and in the first term of the senior year.

One hour a week in the freshman year and four exercises each term during the remainder of the course are devoted to public speaking.

Requirements for Graduation

Candidates in the liberal courses must, to receive a degree, complete 136 term hours, except that honor students will be graduated with 124 term hours* (in each case exclusive of essays and forensics).

In freshman year the student completes 36 term hours, 20 required and 16 elective; in sophomore year he completes 36 term hours, 6 required and 30 elective; in junior and senior years he completes in each year 32 term hours, 2 required and 30 elective. If the student's scholarship standing is satisfactory he *may* elect in junior and senior years 36 instead of 30 term hours; but honor students in junior and senior years *may* elect in each year 24 term hours instead of 30.

All candidates for a degree are required to have completed a certain number of term hours in each of the following groups of subjects:

* By the expression "term hour" is meant one recitation hour or its equivalent (2-3 hours of lectures or laboratory work) in each week during one term; thus a course requiring three recitation hours or their equivalent each week and continued through two terms is equated as six term hours given to the subject of that course.

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Group I English Language and Literature

Minimum requirement for all degrees 8 hours. (This requirement is fulfilled in the freshman year, English courses 163–166.)

Group II Foreign Languages

Minimum requirement for the degrees of A.B. and Litt.B. 22 hours. (For the A.B. degree this requirement must be fulfilled by taking Latin 101–104, or Greek 133, 134, or Greek 131–134, and by taking the remainder of the 22 hours in any foreign language courses elected by the student in sophomore or later years. For the Litt.B. degree this requirement is fulfilled by taking at least eight hours in foreign languages during freshman year and by taking the remainder in such later years as the student may elect.)

Minimum requirement for the degree of B.Sc. 14 hours. (Eight of these hours must be taken in freshman year, the remainder are taken in later years as the student elects.)

Group III Mathematics and Natural Sciences

Minimum requirement for the degrees of A.B. and Litt.B. 14 hours.

(Eight hours of this requirement are fulfilled by mathematics 241, 243, 244 taken in freshman year. The remaining six hours are taken in any year the student elects.)

Minimum requirement for the degree of B.Sc. 50 hours. (Candidates for the degree of B.Sc. are expected to take 16 of these hours, mathematics 241, 243, 244 and chemistry 421, 422 in their freshman year, and are required to take their majors in mathematics or natural science during junior and senior years.)

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Group IV History, and Political and Social Science

Minimum requirement for all degrees 10 hours.

(Four of these hours must be taken in the required course in civics 81, 82 in sophomore year. The remaining six may be taken in sophomore or later years as the student elects.)

Group V Philosophy, Psychology, and Education

Minimum requirement for all degrees 8 hours; in the case of honor students, 2 hours only, subject to the approval of the Dean.

(Two of these hours must be taken in junior year in the required course in English Bible and ethics 1, 2. The remaining six may be taken as the student elects either in junior or senior year.)

Group VI Art and Architecture

Minimum requirement for all degrees 2 hours.

(This requirement is fulfilled by the required course in the history of art 51, 52 in senior year.)

Group VII Military Science

Minimum requirement for all degrees 12 hours equated as 4 hours.

(This requirement is fulfilled through the required courses in military science 651–654 taken in freshman and sophomore years.)

In general the minimum requirement of each group may be fulfilled in the freshman and sophomore years, but one elective must be taken in Group V either in the junior or senior year by all except honor students.

The various degrees will be conferred according to the following principles:

For the A.B. degree, the language requirement includes

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either one year of Latin in college, or one year of Greek for students offering three years of Greek for admission, or two years of Greek for those who enter without Greek.

For the Litt.B. degree no specific requirement is made except the fulfilment of the minimum in each group of courses.

Candidates for the B.Sc. degree will take their majors in mathematics or natural science.

Transfer to another course.—At the end of the freshman year transfer from one course to another may be made with permission of the Faculty, provided all omitted work be made up.

Transfer from the general B.Sc. course to the technical course in Biology requires only the permission of the Faculty.

A change of course after the beginning of the sophomore year will be allowed only in exceptional cases and, in general, involves an extra year of study to obtain the degree desired.

Electives

Rules concerning the election of courses:

1 In May of each year the student must give the Registrar written notice of his elective choices for the ensuing year.

2 Before choosing any elective the student must consult the professor offering this course and receive his approval of the election.

3 All elections are subject to the limitation of the schedule and to the approval of the Dean, and will be allowed only when the previous preparation of the student qualifies him for the course chosen.

4 Before choosing the major and minor courses of the junior and senior years the student must consult the professor in charge of the major subject desired and secure his

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approval of *both* the major course and the minor courses to be elected.

Honor courses.—Certain advanced and specialized courses, designated honor courses, are open only: (*a*) to students who rank as honor men; (*b*) to students who have attained at least the grade of B in all prerequisite courses and in the elementary courses of the same subject; or, (*c*) in the case of courses requiring no specified preliminary and elementary training, to students who are known to have sufficient aptitude for and sufficient interest in the special subject to make it probable that their grade in the course will be at least as high as B.

Junior and senior electives.—Junior and senior courses are arranged in majors and minors.

A major requires six hours weekly for two years. It may consist of two courses in one subject, or of two parallel courses in closely related subjects, as arranged by the department concerned.

A minor consists of one three-hour course running through one year.

At the beginning of the junior year, every student shall choose one major to run through two years, and two minors, properly related to the major and to each other, to run for one year.

At the beginning of the senior year, every student shall again choose two minors, properly related to the major and to each other.

In addition to the major and minors chosen, each student (excepting honor students) shall, at the beginning both of the junior year and of the senior year, choose one other elective course (called free elective), and he may choose two such courses, if his scholarship standing is satisfactory.

For honor students the choice of any other elective courses in addition to the one major and the two minors is optional.

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JUNIOR AND SENIOR ELECTIVES

Majors

Majors (each 6 hours a week) may be chosen in the following subjects:

Botany
Chemistry
Classical Languages (Greek and Latin)
English
French
German
Greek
History
Latin
Mathematics
Physics
Political Science
Spanish
Zoology and Physiology

The combinations of courses constituting majors are designated under the several departments of study, pages 88–162.

Minors

Minor and other elective courses (a total of 6 to 12 hours) may be chosen in the following subjects (each 3 hours a week):

Architecture 53–56
Astronomy 271, 272
Bacteriology 511, 512, 643
Biochemistry 573, 574
Botany 603–610
Business Management 90
Chemistry 421, 422, 427, 428
Constitutional Law 87
Economics 88, 89
Education 31–45
English 167–170, 173-180
English Bible and Ethics 3–6
Entomology 621, 624–626
French 181–192
Geology 463, 464, 467–470
German 217–224, 229, 230
Greek 136–143
Hebrew 151, 152
History 61–78
History of Art 57, 58
Italian 201–204
Latin 109-121
Law and Jurisprudence 85, 86
Mathematics 253–265
Military Science 655–658
Mineralogy 461, 462
Music 59, 60
Philosophy 11–16
Physics 285–292
Physiography 465
Physiology 571, 572
Political Science 83, 84
Psychology 17–20
Public Finance 91, 92
Roman Law 122, 123
Spanish 205–210
Zoology 581, 582,584,585,587–593

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LIBERAL COURSES

Freshman Year

Required 10 hours

Both Terms	*Hours*
English 163–166	4
Mathematics 241, 243, 244	4
Military Science 651, 652	3 = 1
Hygiene 641, 642	1

Elective 8 hours; two courses to be chosen

Both Terms	*Hours*
Latin 101-104	4
Greek 133, 134	4
(or Beginner's Greek	5)
French 181 (183, 187), 182, (184, 188)	4
German 211 (213, 215), 212 (214, 216)	4
Chemistry 421, 422	4

Sophomore Year

Required 3 hours

Civics 81, 82	2
Military Science 653, 654	3 = 1

Elective 15 hours; five courses to be chosen

Latin 105–108	3
Greek 136, 137 (138)	3
French 181 (183, 185, 187), 182 (184, 186, 188)	3
German 217 (219, 221), 218 (220, 222)	3
Spanish 205 (207), 206 (208)	3
English 167, 168	3
Mathematics 253, 254	3
Chemistry 421 (427), 422 (428)	3
Physics 281, 282	3
Zoology 581, 582	3
Botany 603, 604	3
History 61 (70), 62 (71)	3

Junior Year

Required 1 hour

English Bible and Ethics 1, 2	2 = 1

Elective 12-18 hours; see previous page

Major elective	6
Two minors	6
(One or two free electives	3 *or* 6)

Senior Year

Required 1 hour

History of Art 51, 52	2 = 1

Elective 12-18 hours; see previous page

Major elective	6
Two minors	6
(One or two free electives	3 *or* 6)

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TECHNICAL BACHELOR OF SCIENCE COURSES

The studies of these courses are prescribed, except for a three-hour elective in each term of the last two years and for certain options.

Most of the studies of the freshman year, a part of those of the sophomore year, and a few studies of the junior and senior years are the same for all students pursuing these courses.

One essay is required in each term of the freshman, sophomore, and junior years, and in the first term of the senior year.

One hour a week in the freshman year, four exercises each term in the sophomore year, and two each term during the remainder of the course are devoted to public speaking.

In the freshman year the technical courses are slightly differentiated. In the sophomore year the special, or departmental, work of each course constitutes about 50 per cent, and in the junior and senior years about 83 per cent, of the total of studies.

Transfer to another technical course.—The choice of the technical course is made by the student when entering college. Transfers from one course to another are allowed only in exceptional cases, by special permission of the Faculty, and on condition that all omitted work be made up.

For transfer to a liberal course, see page 55.

Requirements for Graduation

Candidates in the technical courses (excepting honor students) must, to receive a degree, complete the following number of term hours: in the engineering courses, in chemistry, and in ceramics, 145 hours; in the agricultural course, 146 hours; in the biological course, 144 hours.

For honor students the required minimum of term hours is: in the engineering courses, in chemistry, and in ceramics, 133 hours; in the agricultural course, 134 hours; in the biological course, 132 hours.

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Options and Electives

At the end of the freshman year each student in the technical Bachelor of Science courses must consult the head of the particular course which he intends to pursue.

At the end of the freshman year each student shall also notify the Registrar of his final choice of one of the technical courses.

Junior and senior electives.—In addition to his technical studies, the student (excepting honor students) must choose for each year one three-hour elective in any department, subject to the rules concerning the election of courses, as stated on page 55.

Students preparing to teach agriculture in secondary schools take psychology 17, 18 as their junior elective.

For honor students the choice of an elective course in addition to the technical studies is optional.

Senior agricultural options.—The groups of options in the course in agriculture are described in connection with that course, on pages 62–65.

Students preparing to teach agriculture in secondary schools take as their senior option a group that includes education 35, 37, 38, 39, 40.

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TECHNICAL BACHELOR OF SCIENCE COURSES

Freshman Year

Biology

First Term	*Hours*	*Second Term*	*Hours*
English 163, 165	3	English 164, 166	3
Mathematics 241	4	Mathematics 245	4
German 211 (213, 215)	4	German 212 (214, 216)	4
Chemistry 421	1	Chemistry 422	1
Lectures 421	2=1	Lectures 422	2=1
Laboratory 421	5=2	Laboratory 422	5=2
Draughting 413	3=1	Draughting 414	3=1
Military Science 651	3=1	Military Science 652	3=1
Hygiene 641	1	Hygiene 642	1

Chemistry and Ceramics

English 163, 165	3	English 164, 166	3
Mathematics 242	5	Mathematics 246	5
German 211 (213, 215)	4	German 212 (214, 216)	4
Chemistry 421	1	Chemistry 422	1
Lectures 421	2=1	Lectures 422	2=1
Laboratory 421	5=2	Laboratory 422	5=2
Draughting 413	3=1	Draughting 414	3=1
Military Science 651	3=1	Military Science 652	3=1
Hygiene 641	1		

Civil, Electrical, and Mechanical Engineering

English 163, 165	3	English 164, 166	3
Mathematics 242	5	Mathematics 246	5
French 181 (183, 187) or German 211 (213, 215)	4	French 182 (184, 188) or German 212 (214, 216)	4
Chemistry 421	1	Chemistry 422	1
Lectures 421	2=1	Lectures 422	2=1
Laboratory 421	3=1	Laboratory 422	3=1
Draughting 411	5=2	Draughting 412	5=2
Military Science 651	3=1	Military Science 652	3=1
Hygiene 641	1		

For freshman year in Agriculture see page 67.

The schedule of studies for sophomore, junior, and senior years is given on the subsequent pages in connection with the general description of each technical science course.

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COURSE IN AGRICULTURE

(For short courses in agriculture see pages 86, 87, 163, 164.)

The four-year course in agriculture is designed to give a broad education and a thorough training in those branches of natural science which are the basis of scientific agriculture.

The fundamental subjects especially emphasized are chemistry, physics, zoology, botany, bacteriology, and entomology. The general study of these subjects is supplemented by special laboratory, field, and classroom work in horticulture, plant propagation, plant pathology, animal husbandry, dairying, soils, fertilizers, agronomy, poultry husbandry, and farm management. The relations of chemistry, physics, and biology to soils and their fertility and maintenance are clearly pointed out; also the need for, and the influence of, manures, fertilizers, and soil amendments. The relations of botany, biology, and chemistry in the selection and rotation of crops, in the composition of animal and human foods and manufactured farm and dairy products, and in the economic development of the farm, are made a prominent part of the instruction in these branches.

The selection, development, improvement, and care of the live stock of the farm and a study of the interdependence of animal husbandry and crop growing are an important part of the practical work required in the various laboratories.

A complete revision (tabulated on pages 67 and 68) of the course in Agriculture has been put into effect, beginning with the class of 1923. The classes of 1920, 1921, and 1922, however, are completing their work under the old plan, a description of which follows.

The agricultural subjects of the senior year are divided into optional groups, as shown in the following table. Each student chooses one of these groups.

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Senior Optional Groups

Group	*Major Subject*		*Minor Subject*
I	Pomology	with	Entomology Plant Pathology
II	Pomology	with	Market Gardening Crops and Farm Management
III	Market Gardening	with	Entomology Plant Pathology
IV	Market Gardening	with	Entomology Crops and Farm Management
V	Poultry Husbandry	with	Animal Husbandry Crops and Farm Management
VI	Poultry Husbandry	with	Animal Breeding Poultry Pathology
VII	Dairy Husbandry	with	Animal Husbandry Crops and Farm Management
VIII	Dairy Husbandry	with	Animal Breeding Crops and Farm Management
IX	Entomology	with	Bacteriology Plant Pathology
X	Soil Fertility	with	Microbiology Geology
XI	Plant Pathology	with	Entomology Bacteriology
XII	Agricultural Education	with	Market Gardening Crops and Farm Management
XIII	Agricultural Education	with	Animal Husbandry Crops and Farm Management

Other options may be allowed upon consultation with the professors concerned.

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The application of at least three students is necessary to justify the offering of an optional. Assignments to courses for a smaller number of students may be made upon the recommendation of the professors involved, subject to the approval of the Dean.

The combination of the optional group and free electives chosen must have the approval of the head of the department in which the student is majoring.

The courses in the foregoing groups, with their numbers and hours a week, are as follows:

Major Subjects

First Term	*Hours*	*Second Term*	*Hours*
Pomology 537, 539	3	Pomology 540, 542	3
Laboratory 537, 538	8=3	Laboratory 540–542	7=3
Market Gardening 543	3	Market Gardening 544	3
Laboratory 543	8=3	Laboratory 544	8=3
Poultry Husbandry 531	3	Poultry Husbandry 532	3
Laboratory 531	8=3	Laboratory 532	8=3
Dairy Husbandry 525, 526	3	Dairy Husbandry 527–529	3
Laboratory 525, 526	8=3	Laboratory 527, 528	8=3
Soil Fertility 509, 513	3	Soil Fertility 510, 514	3
Laboratory 513	8=3	Laboratory 510	8=3
Entomology 622	3	Entomology 623	3
Laboratory 622	8=3	Laboratory 623	8=3
Plant Pathology 609	3	Plant Pathology 610	3
Laboratory 609	8=3	Laboratory 610	8=3
Agricultural Education 33, 38	**6**	**Agricultural Education 39, 40**	**6**

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Minor Subjects

First Term	*Hours*	*Second Term*	*Hours*
Plant Pathology 605	2	Plant Pathology 606	2
Laboratory 605	3 = 1	Laboratory 606	3 = 1
Crops 506	2	Farm Management 507	2
Laboratory 506	3 = 1	Laboratory 507	3 = 1
Bacteriology 515	2	Bacteriology 516	2
Laboratory 515	3 = 1	Laboratory 516	3 = 1
Microbiology 517	2	Microbiology 518	2
Laboratory 517	3 = 1	Laboratory 518	3 = 1
Animal Husbandry 520, 521	2	Animal Husbandry 522, 523	2
Laboratory 521	3 = 1	Laboratory 523	3 = 1
Geology 467	2	Geology 468	2
Laboratory 467	3 = 1	Laboratory 468	3 = 1
Entomology 624	2	Entomology 625	2
Laboratory 624	3 = 1	Laboratory 625	3 = 1
Market Gardening 545	2	Market Gardening 546	2
Laboratory 545	3 = 1	Laboratory 546	3 = 1
Poultry Pathology 533	2	Poultry Pathology 534	2
Laboratory 533	3 = 1	Laboratory 534	3 = 1
Animal Breeding 589	2	Animal Breeding 590	2
Laboratory 589	3 = 1	Laboratory 590	3 = 1

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COURSE IN AGRICULTURE

(In Effect for the Classes of 1920, 1921, and 1922)

Sophomore Year

First Term	*Hours*	*Second Term*	*Hours*
Civics 81	2	Civics 82	2
English Composition 171	3	English Composition 172	3
Physics 281	3	Physics 282	3
Qualitative Analysis 425	2	Agronomy 504	2
Laboratory 425	5=2	Laboratory 504	3=1
Soils 502	2	Dairy Husbandry 524	1
Laboratory 502	3=1	Laboratory 524	3=1
Botany 603	2	Poultry Husbandry 530	1
Laboratory 603	3=1	Laboratory 530	3=1
Military Science 653	3=1	Botany 604	2
		Laboratory 604	3=1
		Military Science 654	3=1

Summer { Field practice in General Surveying 306...50 hours
Field practice in Soil Surveying 503.....50 "

Junior Year

Quantitative Analysis 429	1	Fertilizers and Manures 508	2
Laboratory 429	8=3	Animal Husbandry 519	2
Plant Propagation 535	2	Laboratory 519	3=1
Laboratory 535	3=1	Pomology 536	3
Bacteriology 511	2	Laboratory 536	3=1
Laboratory 511	3=1	Zoology 582	2
Zoology 581	2	Laboratory 582	3=1
Laboratory 581	3=1	Entomology 621	2
Plant Pathology 605	1	Laboratory 621	3=1
Laboratory 605	3=1	Elective	3
Elective (See pages 55, 57)	3		

Senior Year

Optional Group (See page 63)	12	Optional Group	12
Elective.*	6	Elective.*	6

* Research Thesis 549, 550 may be chosen as one of the elective courses. Otherwise, Graduation Thesis 681 is required.

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REVISED COURSE IN AGRICULTURE

(EFFECTIVE WITH THE CLASS OF 1923)

Freshman Year

First Term	*Hours*	*Second Term*	*Hours*
English 163, 165	3	English 164, 166	3
Mathematics 241	4	Mathematics 243, 244	4
Chemistry 421	1	Chemistry 422	1
Lectures 421	2=1	Lectures 422	2=1
Laboratory 421	5=2	Laboratory 422	5=2
Botany 601	2	Botany 602	2
Laboratory 601	3=1	Laboratory 602	3=1
General Agriculture 501	2	Soils 502	2
Laboratory 501	3=1	Laboratory 502	3=1
Military Science 651	3=1	Military Science 652	3=1
Hygiene 641	1	Hygiene 642	1
	19		19

Sophomore Year

English Composition 171	3	English Composition 172	3
Qualitative Analysis 425	2	Organic Chemistry 438	2
Laboratory 425	5=2	Physics 282	3
Physics 281	3	Poultry Husbandry 530	2
Zoology 581	3	Laboratory 530	3=1
Laboratory 581	5=2	Dairy Husbandry 524	2
Agronomy 504	2	Laboratory 524	3=1
Laboratory 504	3=1	Horticulture 535	2
Military Science 653	3=1	Laboratory 535	3=1
	19	Military Science 654	3=1
			18

Junior Year

History	3	History	3
Bacteriology	3	Genetics	3
Entomology	3	Group Elective	3
Group Elective	6	Free Elective	9
Free Elective	3		18
	18		

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Senior Year			Hours
Economics	3	Rural Economics	3
Group Elective	12	Group Elective	12
Free Elective	3	Free Elective	3
	18		18

Group Electives will be offered in the following subjects:

Horticulture
Poultry Husbandry
Crops and Farm Management
Soil Fertility
Dairy Husbandry
Agricultural Education
Agricultural Research

Detailed descriptions of the courses given in each group will appear in the catalog for 1920–1921.

While farm experience is not a requirement for graduation, it is expected, as this may be a determining factor in the responsibilities the student assumes on leaving college, especially if engaged in any form of agricultural production.

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TEACHER-TRAINING COURSE IN AGRICULTURE

Special courses for the training of teachers are offered under the provisions of the Smith-Hughes Act passed by United States Congress February 23, 1917. Under an arrangement entered into by the State Agricultural College and the State Board of Education this institution has been designated as the Teacher-Training Institution for the preparation of teachers in the various vocational fields. Students preparing to be vocational teachers of agriculture complete a program of studies in the first two years which is similar to the regular program in the agricultural course; in the junior and senior years the studies listed below are pursued.

Junior Year

First Term	*Hours*	*Second Term*	*Hours*
English Composition 171	3	English Composition 172	3
Bacteriology 511	2	Elective (Agriculture)	3
Laboratory 511	3=1	Farm Management 507	3
Vegetable Gardening for Teachers 543	2	Pomology 536	3
Practical Work 543	3=1	Laboratory 536	3=1
Fertilizers and Manures 508	2	Zoology 582	2
Laboratory 508	3=1	Laboratory 582	3=1
Elective (Agriculture)	3	School Management 42	3
Zoology 581	2		19
Laboratory 581	3=1		
Methods of Teaching 41	3		
	21		

Senior Year

Farm Mechanics and Farm Shop 556	2	Farm Mechanics and Farm Shop 557	2
Shop Work 556	3=1	Shop Work 557	3=1
Methods of Teaching Agriculture 38	2	Agriculture in the High School 39	2
Practicum 38	3=1	Practicum 39	3=1
Rural Sociology	3	Practice Teaching in Agricultural High Schools 40	3
Agricultural Thesis 549	2	Agricultural Thesis 550	2
Electives	8	Electives	8
	19		19

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BIOLOGY

(*a*) Course in Premedical Biology

The technical part of this course is a comprehensive combination of chemical and biological sub-courses. Biochemistry (not offered in other courses) is here added to qualitative and quantitative analysis and organic chemistry. Basic courses in botany, zoology, bacteriology, and entomology give excellent preparation for teachers of natural science, and with the addition of fundamental courses in anatomy, histology, embryology, and physiology, afford a broad foundation for medical study and biological research.

(*b*) Other Four-Year Courses

Besides the premedical course in biology, four-year courses are offered in sanitary science, in economic entomology, and in applied botany. In the sophomore year these courses are identical with the premedical course, save that students of sanitary science take limnology instead of plant physiology in the second term and one hundred hours of field surveying during the first two weeks of the succeeding summer. The studies of the various biological courses are tabulated on the following pages, except in the case of applied botany, the outline of which may be obtained from the department of botany.

Elective Courses

Biological subjects are offered separately and in combination as electives. Specialization in either plant or animal study is thus facilitated for students who do not take the course in agriculture or in biology.

The College supports tables at the Brooklyn Institute Laboratory at Cold Spring Harbor, Long Island, and at the Woods Hole Marine Biological Laboratory, where students may take summer courses for undergraduate or graduate credit.

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COURSE IN BIOLOGY: PREMEDICAL BIOLOGY

(For Freshman Year see page 61.)

Sophomore Year

First Term	*Hours*	*Second Term*	*Hours*
Civics 81	2	Civics 82	2
English Composition 171	3	English Composition 172	3
Physics 281	4	Physics 282	4
Qualitative Analysis 427	1	Qualitative Analysis 428	1
Laboratory 427	5=2	Laboratory 428	5=2
Zoology Lectures 581	2=1	Zoology Lectures 582	2=1
Laboratory 581	5=2	Laboratory 582	5=2
Botany 603	2	Botany 604	2
Laboratory 603	3=1	Laboratory 604	3=1
Military Science 653	3=1	Military Science 654	3=1

Junior Year

Quantitative Analysis 429	1	Organic Chemistry 438	2
Laboratory 429	8=3	Calculus 254	3
Bacteriology 511 or Entomology 621	2	Bacteriology 512 or Entomology 626	2
Laboratory 511 or 621	3=1	Laboratory 512 or 626	3=1
Vertebrate Anatomy 584	1	Vertebrate Anatomy 585	1
Laboratory 584	5=2	Laboratory 585	5=2
Physiology 571	2	Physiology 572	2
Laboratory 571	5=2	Laboratory 572	5=2
Animal Parasites 586	1	Elective	3
Laboratory 586	3=1		
Elective (See pages 55, 57)	3		

Senior Year

Organic Chemistry 439	1	Organic Chemistry 440	1
Lectures 439	2=1	Lectures 440	2=1
Laboratory 439	8=3	Laboratory 440	8=3
Biochemistry 573	2	Biochemistry 574	2
Laboratory 573	8=3	Laboratory 574	5=2
Histology 587	2	Embryology 588	2
Laboratory 587	8=3	Laboratory 588	5=2
Elective	3	Graduation Thesis 681	5=2
		Elective	3

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COURSE IN BIOLOGY: SANITARY SCIENCE

(For Freshman Year see page 61.)

(For Sophomore Year see pages 70, 71.)

Junior Year

First Term	*Hours*	*Second Term*	*Hours*
Quantitative Analysis 429	1	Engineering Geology 466	1
Laboratory 429	8=3	Laboratory 466	2=1
Animal Parasites 586	1	Calculus 254	3
Laboratory 586	3=1	Pathogenic Bacteriology 643	2
Bacteriology 511	2	Laboratory 643	3=1
Laboratory 511	3=1	Entomology 626	2
Entomology 621	2	Laboratory 626	3=1
Laboratory 621	3=1	Physiology 572	2
Physiology 571	1	Laboratory 572	5=2
Laboratory 571	5=2	Elective	3
Elective (See pages 55, 57)	3		

Summer: Water Analysis 433 ..... 100 hours

Senior Year

Organic Chemistry 439	1	Organic Chemistry 440	1
Lectures 439	2=1	Lectures 440	2=1
Laboratory 439	8=3	Laboratory 440	8=3
Biochemistry 573	1	Biochemistry 574	1
Laboratory 573	5=2	Laboratory 574	5=2
Histology 587	1	Embryology 588	1
Laboratory 587	5=2	Laboratory 588	5=2
Public Health Law and Epidemiology 644	2	Sewerage 322	2
Public Water Supply 317	2	Graduation Thesis 681	5=2
Elective	3	Elective	3

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COURSE IN BIOLOGY: ECONOMIC ENTOMOLOGY

(For Freshman Year see page 61.)

(For Sophomore Year see page 70.)

Junior Year

First Term	*Hours*	*Second Term*	*Hours*
Quantitative Analysis 429	1	Medical Entomology 626	2
Laboratory 429	8=3	Laboratory 626	3=1
General Entomology 621	2	Taxonomic Entomology 623	3
Laboratory 621	3=1	Laboratory 623	8=3
Physiology 571	1	Physiology 572	1
Laboratory 571	5=2	Laboratory 572	5=2
Plant Pathology 605	2	Plant Pathology 606	2
Laboratory 605	3=1	Laboratory 606	3=1
Animal Parasites 586	1	Elective	3
Laboratory 586	3=1		
Elective (See pages 55, 57)	3		

Senior Year

Organic Chemistry 439	1	Organic Chemistry 440	1
Lectures 439	2=1	Lectures 440	2=1
Laboratory 439	8=3	Laboratory 440	8=3
Biochemistry 573	1	Biochemistry 574	1
Laboratory 573	5=2	Laboratory 574	5=2
Economic Entomology 622	3	Morphology and Development of Insects 627	3
Laboratory 622	10=4	Laboratory 627	10=4
Elective	3	Elective	3

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COURSE IN CERAMICS

The course in ceramics is arranged to include thorough instruction in chemistry and engineering theory as applied to ceramic operations.

Lectures and laboratory courses in general and analytical chemistry, physics, geology, mineralogy, and crystallography are given. The engineering subjects include drafting, surveying, and courses in mechanical and electrical engineering.

Instruction is given in the important phases of the mechanical and chemical operations of the industry; winning and preparation of the raw materials; manufacturing processes; design and construction of equipment and plants, kilns, and driers; and the testing of raw materials and finished products.

The laboratory courses in ceramics are of a practical nature. The mechanical equipment makes it possible to reproduce the operations involved in the manufacture of ceramic products. The laboratory work is supplemented by visits to the ceramic industries of the State.

The short course in clay-working is described on page 85.

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COURSE IN CERAMICS

(For Freshman Year see page 61.)

Sophomore Year

First Term	*Hours*	*Second Term*	*Hours*
Civics 81	2	Civics 82	2
English Composition 171	3	English Composition 172	3
Calculus 247	3	Calculus 248	3
Physics 283	3	Physics 284	3
Qualitative Analysis 425	2	Qualitative Analysis 426	2
Laboratory 425	5=2	Laboratory 426	5=2
Origin and Nature of Clays 481	1	Winning and Preparation of Clays 482	1
Lectures 481	2=1	Lectures 482	2=1
Military Science 653	3=1	Military Science 654	3=1

Summer: Field Practice in Surveying 306 ..... 100 hours

Junior Year

Mineralogy 461	1	Mineralogy 462	1
Laboratory 461	5=2	Laboratory 462	3=1
Quantitative Analysis 429	1	Quantitative Analysis 430	1
Laboratory 429	8=3	Laboratory 430	8=3
Elements of Direct Currents 345	3	Dynamo Laboratory 348	3=1
Ceramic Calculations 483	2	Mechanics of Materials 385	4
Physical Testing of Clays 484	1	Refractory Materials 485	2
Laboratory 484	5=2	Laboratory 485	5=2
Elective (See pages 55, 57)	3	Elective	3

Senior Year

Geology 463	3	Silicates 489	3
Steam Engineering 389	2	Ceramic Construction 491	8=3
Laboratory 395	3=1	Driers and Kilns 490	3
Ceramic Bodies and Glazes 486	1	Ceramic Bodies and Glazes 487	1
Lectures 486	2=1	Laboratory 487	8=3
Laboratory 486	10=4	Graduation Thesis 492, 681	8=3
Thermochemical Calculations 488	3	Elective	3
Elective	3		

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COURSE IN CHEMISTRY

A student who pursues throughout the four years the courses laid down as required by the chemical department is qualified on graduation to enter at once the positions open to chemists in factories or technical and analytical laboratories or to pursue his scientific studies further on the lines of original research in laboratories of pure science.

Work in chemistry begins in the first year with a course in general chemistry, embracing both classroom and laboratory exercises. In the second year the student begins his study of analytical methods with qualitative analysis. Further study along the lines of analytical chemistry in quantitative analysis follows these courses in the third year and at the same time practical application of the chemical methods along industrial lines is begun.

In the fourth year organic, physical, advanced inorganic, and organic industrial chemistry are studied in both classroom and laboratory. At the beginning of the second term of the fourth year the student chooses some problem of special interest for intensive study and is required to search the technical literature and journals for full details on this subject and then carry out a scheme of laboratory work along the lines thus opened up for him. This gives him an opportunity to study the methods of practical chemists and to make direct application of his own studies throughout the four years of his work in the field of chemistry. At the end of the year his written report upon the work accomplished is turned in as part of his graduation requirements in the form of a thesis.

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COURSE IN CHEMISTRY

(For Freshman Year see page 61.)

Sophomore Year

First Term	*Hours*	*Second Term*	*Hours*
Civics 81	2	Civics 82	2
English Composition 171	3	English Composition 172	3
Calculus 247	3	Calculus 248	3
Physics 283	3	Physics 284	3
Qualitative Analysis 423	3	Qualitative Analysis 424	3
Laboratory 423	8=3	Laboratory 424	8=3
Military Science 653	3=1	Military Science 654	3=1

Junior Year

Mineralogy 461	1	Mineralogy 462	1
Laboratory 461	5=2	Laboratory 462	3=1
Industrial Chemistry 434	3	Industrial Chemistry 435	3
Quantitative Analysis 431	1	Quantitative Analysis 432	1
Lectures 431	2=1	Lectures 432	2=1
Laboratory 431	10=4	Laboratory 432	15=6
Bacteriology 511	2	Elementary Organic Chemistry 438	2
Laboratory 511	3=1		
Elective (See pages 55, 57)	3	Elective	3

Senior Year

Physical Chemistry 443	2	Physical Chemistry 444	2
Organic Chemistry 439	1	Organic Chemistry 440	1
Lectures 439	2=1	Lectures 440	2=1
Laboratory 439	10=4	Laboratory 440	8=3
Organic Industrial Chemistry 436	1	Organic Industrial Chemistry 437	1
Lectures	2=1	Lectures 437	2=1
Advanced Inorganic Chemistry		Advanced Inorganic Chemistry	
Lectures 441	2=1	Lectures 442	2=1
Laboratory 441	3=1	Laboratory 442	3=1
Geology 463	3	Graduation Thesis 445, 681	10=4
Elective 3	3	Elective	3

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COURSE IN CIVIL ENGINEERING

This course is designed to give the student a knowledge of the fundamental principles essential to the profession of civil engineering. It is recognized that an engineer must gain proficiency by practical experience and that a college course should aim to provide adequate mental training for engineering practice as well as a knowledge of its governing principles. To this end a thorough drill in mathematics is given both for its general educational value and for its importance as an essential tool for the educated engineer.

The subjects of a technical character embrace plane surveying in all its branches; railroad engineering; the materials of construction and their uses; the mechanics and strength of materials; the designing of bridges and other structures, including the determination of stresses in the members of such structures by both analytic and graphic methods; sanitary engineering as it applies more particularly to the supply of pure water to towns and the building of the necessary waterworks, the building of sewers, and the disposal of sewage; the making of pavements and roads; hydraulic engineering; geodesy. In addition to practice in surveying during term time, field practice in surveying and railroad location is given at the end of the college year when the whole time for two or more weeks is devoted to such work. Drafting is continued throughout the four years in connection with the subjects taught in the classroom. Laboratory practice in performing hydraulic experiments, in testing steel, cement, and other materials, and field work in precise surveying and leveling are carried on during the senior year.

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COURSE IN CIVIL ENGINEERING

(For Freshman Year see page 61.)

Sophomore Year

First Term	*Hours*	*Second Term*	*Hours*
Civics 81	2	Civics 82	2
English Composition 171	3	English Composition 172	3
Calculus 249	4	Calculus 250	4
Physics 283	4	Physics 284	4
Descriptive Geometry 301	2	Surveying 302	2
Drawing 301	3=1	Field Practice 302	3=1
Machine Drawing 304	3=1	Topographical Drawing 305	3=1
Military Science 653	3=1	Military Science 654	3=1

Summer: Field Practice in Surveying 306 ..... 100 hours

Junior Year

Mechanics 251	4	Mechanics 252	2
Steam Engineering 389	2	Steam Engineering 391	1
Laboratory 395	3=1	Dynamo Laboratory 348	3=1
Electrical Engineering 341	3	Railway Engineering 308	2
Graphic Statics 307	3=1	Field Practice 308	3=1
Strength of Materials 309	4	Theory of Structures 312	3
Elective (See pages 55, 57)	3	Hydraulics 313	3
		Laboratory 313	3=1
		Materials Laboratory 315	3=1
		Elective	3

Summer: Railroad Surveying 311 ..... 100 hours

Senior Year

Reinforced Concrete 314	3	Engineering Geology 466	1
Cement Laboratory 314	3=1	Laboratory 466	2=1
Theory of Structures 316	2	Masonry Construction 310	4=2
Bridge Design 324	4=2	Bridge Design 325	3=1
Public Water Supplies 317	2	Highway Engineering 319	2
Design 318	3=1	Geodesy: Pract. Astronomy 320	3
Railroad Economics 321	2	Field Practice 320	3=1
Design 321	3=1	Engineering Topics 328	2=1
Engineering Topics 327	2=1	Sewerage 322	2
Elective	3	Design 323	3=1
		Graduation Thesis 681	
		Elective	3

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COURSE IN ELECTRICAL ENGINEERING

This course is designed to give the student a thorough training in those general and scientific subjects which are fundamental and in those technical subjects which will best fit him to enter upon the profession of electrical engineering.

The general subjects are for the most part studied in the first two years of the course, thus giving a proper foundation for the technical subjects involving the applications of electrical theory to dynamo-electric machinery, telegraphy, telephony, illuminating engineering, power transmission and distribution, and electric railways, all of which are taken up in the junior and senior years. Certain studies in the departments of civil and mechanical engineering which are of special importance to an electrical engineer, as, for example, steam engines and boilers, and power-plant engineering, are included in the course. Great importance is attached to the study of the theory of electricity upon which all electrical engineering depends.

Visits to electric power plants and the works of the large electrical manufacturing companies are a very important feature of the course.

Laboratory instruction begins in the laboratories of chemistry and general physics. This is followed by work in electrical measurements and in the dynamo and steam-engineering laboratories, which includes the usual factory and commercial tests of the various types of direct-current and single and polyphase alternating-current generators and motors, rotary converters, transformers, and other electrical apparatus, and also steam engine tests. This work is planned to familiarize the student with the operation of electrical apparatus and to develop in him habits of careful observation. Accuracy in the results obtained is essential.

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COURSE IN ELECTRICAL ENGINEERING

(For Freshman Year see page 61.)

Sophomore Year

First Term	*Hours*	*Second Term*	*Hours*
Civics 81	2	Civics 82	2
English Composition 171	3	English Composition 172	3
Calculus 249	4	Calculus 250	4
Physics 283	4	Physics 284	4
Machine Drawing 371	5 = 2	Machine Drawing 372	5 = 2
Machine Elements 376	4 = 2	Surveying 303	2
Military Science 653	3 = 1	Military Science 654	3 = 1

Summer: Field Practice in Surveying 306.....100 hours.

Junior Year

Mechanics 251	4	Mechanics 252	2
Steam Boilers and Engines 390	3	Elements of Machine Design 373	3 = 1
Elements of Direct Current Engineering 341	3	Elements of Alternating Currents 346	5
Telephones and Telegraphs 342	2	Mechanics of Materials 385	4
Theory of Electrical Measurements 343	1	Mechanical Instruments 396	1
		Laboratory 397	3 = 1
Electrical Laboratory 344	5 = 2	Dynamo Laboratory 348	3 = 1
Elective (See pages 55, 57)	3	Elective	3

Summer: { Dynamo Laboratory 349..... 50 hours
Mechanical Laboratory 397..... 50 "

Senior Year

Thermodynamics 392	3	Power Plant Engineering 394	2
Advanced Alternating Currents 351	4	Advanced Alternating Currents 352	4
Electric Power Transmission 353	2	Electric Traction 354	3
Dynamo Laboratory 356	5 = 2	Dynamo Laboratory 357	5 = 2
Electrical Design 358	2 = 1	Electrical Design 359	2 = 1
Illuminating Engineering 350	2	High Voltage Engineering 355	2
Seminar 360	2 = 1	Seminar 361	2 = 1
Elective	3	Graduation Thesis 681	
		Elective	3

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COURSE IN MECHANICAL ENGINEERING

The aim of the technical studies in this course is to give a thorough drill in the principles which underlie mechanical engineering and to prepare the graduate to acquire easily and rapidly the special skill and knowledge of detail belonging to the particular line of work which he may follow.

The elements of machine drawing are taught in the sophomore year, with some empirical machine design; but the principal work in design comes in the senior year, after the necessary theory has been presented and a better foundation of general knowledge established.

A descriptive knowledge of machine elements and of a few important machines is given in the sophomore year, after which description becomes an incidental part of many courses. From this beginning the study of machine construction turns to shop processes, work in the shop, machine tools and their operation, and the principles of shop design and operation.

Applied mechanics run through the junior and senior years, in the general subjects of mechanics of materials and hydraulics and in the mechanics of machinery which deals more particularly with motions and forces in machines.

A good grounding in the principles of electric power engineering is given in the junior year. Heat and power engineering is begun in the junior year and runs through the senior year, where the title thermodynamics covers not only the theory of the subject, but also its applications in steam and gas engines and in power plants.

Work in the mechanical laboratory, mainly along the lines of applied thermodynamics and measurement of power, with some applied mechanics, is intended to enforce the principles taught in the classroom and to give the student skill and confidence in using them.

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COURSE IN MECHANICAL ENGINEERING

(For Freshman Year see page 61.)

Sophomore Year

First Term	*Hours*	*Second Term*	*Hours*
Civics 81	2	Civics 82	2
English Composition 171	3	English Composition 172	3
Calculus 249	4	Calculus 250	4
Physics 283	4	Physics 284	4
Machine Drawing 371	5=2	Machine Drawing 372	5=2
Machine Elements 376	4=2	Constructive Processes 377	5=2
Military Science 653	3=1	Military Science 654	3=1

Summer: Machine Construction 378..... 100 hours

Junior Year

Mechanics 251	4	Mechanics 252	2
Elements of Direct-Current Engineering 341	3	Elements of Alternating-Current Engineering 346	5
Machine Shop Methods 379	3=1	Dynamo Laboratory 348	3=1
Mechanism and Kinematics 386	2	Materials and Tools 380	2=1
Drafting 386	5=2	Mechanics of Materials 385	4
Steam Boilers and Engines 390	3	Mechanical Instruments 396	1
Elective (See pages 55, 57)	3	Laboratory 396	3=1
		Elective	3

Summer: { Dynamo Laboratory 349..... 50 hours
Mechanical Laboratory 397..... 50 "

Senior Year

Hydraulics 326	3	Industrial Organization 382	2=1
Thermodynamics 392	3	Thermodynamics 393	3
Machine Design 374	6=3	Machine Design 375	6=3
Industrial Organization 381	2=1	Power Plant Engineering 394	2
Graphics 387	1	Kinematics and Dynamics 388	2
Drafting 387	5=2	Drafting 388	5=2
Mechanical Laboratory 398	3=1	Mechanical Laboratory 399	3=1
Engineering Topics 383	2=1	Engineering Topics 384	2=1
Elective	3	Graduation Thesis 681	
		Elective	3

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GRADUATE COURSES

In Agriculture

Farm Crops..... 558
Farm Management..... 559
Microbiology of Soils..... 560
Soil Bacteriology..... 561
Soil Chemistry..... 562
Soil Fertility..... 563
Advanced Animal Husbandry... 564
Advanced Dairy Husbandry.... 565
Research Thesis in Dairy Husbandry..... 566
Advanced Poultry Husbandry.. 567
Pomology and Small Fruits..... 568
Olericulture..... 569
Plant Physiology..... 570

In Plant Pathology: Mycology.....609, 610
Advanced Plant Pathology.....611–614

In Entomology: Taxonomic Entomology..... 628
Economic Entomology..... 629
Morphology and Development of Insects.. 630

In Zoology: Research in Histology..... 596
Research in Embryology..... 597
Research in Ecology..... 598

In Physiology: Research in General Physiology and Chemical Biology..... 575

In Chemistry: Advanced Inorganic Chemistry: Physical Chemistry..... 446
Advanced Organic Chemistry..... 447
Advanced Quantitative Chemistry..... 448

In Geology: Agricultural Geology.....467, 468
Economic Geology.....469, 470

In Civil Engineering: Reinforced Concrete Construction..... 329
Sanitary, Hydraulic, and Irrigation Engineering..... 330

In Education: Methods and Measurements in Education.. 43
Educational Measurements..... 44
Educational Administration..... 45

In History: Problems in the History of the West..... 78

In French: Classic French Literature.....193, 194

In German: History of German Literature..... 231
German Literature in the Nineteenth Century..... 232

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SHORT COURSE IN CLAY-WORKING

The two-year course is designed for young men who lack the time or the means to pursue the longer course described on page 74.

For those who have had practical experience in the ceramic industries (see page 42) are provided courses that include special laboratory work in ceramics and all or a part of the ceramic and other subjects given in the short course.

First Year

First Term	*Hours*	*Second Term*	*Hours*
Physics 281	3	Physics 282	3
Chemistry 421	2	Chemistry 422	2
Laboratory 421	5=2	Laboratory 422	5=2
Origin and Nature of Clays 481	1	Winning and Preparation of Clays 482	1
Lectures 481	2=1	Lectures 482	2=1
Physical Testing of Clays 484	1	Refractory Materials 485	2
Laboratory 484	10=4	Laboratory 485	10=4
Ceramic Calculations 483	2		
Military Science* 651	3=1	Military Science* 652	3=1

Second Year

Geology 463	3	Geology 464	3
Qualitative Analysis 425	2	Qualitative Analysis 426	2
Laboratory 425	5=2	Laboratory 426	5=2
Ceramic Bodies and Glazes 486	2	Ceramic Bodies and Glazes	
Lectures 486	2=1	Laboratory 487	8=3
Laboratory 486	10=4	Driers and Kilns 490	3
Drafting 413	3=1	Ceramic Construction 491	8=3
Military Science* 653	3=1	Military Science* 654	3=1

* Practical clay-workers are exempt from the course in military science.

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SHORT COURSES IN AGRICULTURE

The short courses in agriculture are planned to give assistance to those who desire to become better farmers, more skilful stockmen, dairymen, poultrymen, fruit growers, or market gardeners, but who are unable to take an extended course of study.

They give training in the best modern methods of managing farms, dairies, and orchards. The instruction in everything is practical with the special view of being immediately useful. Students are taught by practical demonstration how to manage soils, to use fertilizers, to judge farm stock, to manage poultry, to select varieties of farm crops, to propagate plants, to bud, graft, plant, and prune orchards, to handle and test milk and cream, to use cream separators, to make butter, and in general more intelligently to conduct farming operations.

Students coming for the first time are urged to select the course in general agriculture and dairy farming, as the work offered in that course is more general in its character and furnishes a good foundation for a study of special lines. One of the other short courses may then be taken more advantageously the second winter.

The four-year Course in Agriculture is described on pages 62-69.

SHORT COURSES IN AGRICULTURE

Course I.—General and Dairy Farming

Soils and Fertilizers
Farm Problems
Animal Husbandry
Agronomy
Dairy Manufactures
Dairy Production
General Economic Entomology
Poultry Husbandry
Practical Fruit Growing
Agricultural Engineering
Seed Testing and Identification
Stock Feeding
Farm Machines

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Course II.—Fruit Growing and Market Gardening

Soil Fertility
Principles of Plant Growth
Principles of Pruning
Spraying of Orchards
Practical Fruit Growing
Systematic Pomology
Plant Diseases
Vegetable Gardening
Animal Husbandry
Economic Entomology
Poultry Husbandry
Farm Problems
General Laboratory

Course III.—Poultry Husbandry

Types and Breeds of Poultry
Poultry Breeding
Exhibition, Scoring and Judging
Preparation and Marketing
Location, Design, and Construction of Buildings
Sanitation, Parasites, and Diseases
Incubation and Brooding
Poultry Farm Management
Principles and Practice of Poultry Feeding
Turkeys, Geese, Ducks, Pigeons, and Game Fowls
Flock Practice
Animal Husbandry
Practical Fruit Growing
Soil Fertility
Woodshop and Forge Work
Agronomy
Vegetable Gardening
Trips

Course IV.—Bee Husbandry

Soils and Fertilizers
Animal Production and Feeding
Agronomy
Practical Fruit Growing
Farm Problems
Economic Entomology
Shop Practice
Honey Plants
Honeys
Bee Husbandry

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DESCRIPTION OF COURSES.

THE textbooks and other works named in connection with these descriptions are intended in general to be merely representative and may be changed from year to year.

ENGLISH BIBLE AND ETHICS

Professor FALES

1. *English Bible and Ethics*

Junior year, first term, 2 hours equated as 1; required in the liberal courses.

2. *Social Ethics*

Junior year, second term, 2 hours equated as 1; required in the liberal courses.

3. *Introduction to the Bible*

Junior or senior year, first term, 3 hours.

4. *Social Teachings of Jesus*

Junior or senior year, second term, 3 hours.

5. *Introduction to the Study of Society*

Junior or senior year, first term, 3 hours.

6. *Present-day Social Problems*

Junior or senior year, second term, 3 hours.

PHILOSOPHY AND PSYCHOLOGY

Professor MARVIN

11. *History of Philosophy*

Junior or senior year, first term, 3 hours.

The intellectual development of Europe in its philosophical aspects from prehistoric times to the present.

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12 *History of Philosophy* (continued)

Junior or senior year, second term, 3 hours.

13 *Logic*

Junior or senior year, first term, 3 hours.

An elementary study of the principles and methods of definition, classification, and inference.

14 *History of Modern Science*

Junior or senior year, second term, 3 hours.

The general development of science during the past four centuries. In addition, each student is expected to study the history of the science in which he is specializing.

15 *Metaphysics* *Honor Course*

Junior or senior year, first term, 3 hours.

An elementary study of the logical foundations of the major sciences and of the prominent philosophical problems that have been raised regarding the nature of science.

16 *Metaphysics* (continued) *Honor Course*

Junior or senior year, second term, 3 hours.

17 *Elementary Psychology*

Junior or senior year, first term, 3 hours.

An elementary study of human behavior, especially of inborn nature and its control, of habit formation and its control, of individual mental differences, their causes, measurement, and control, and of mental hygiene.

18 *Elementary Psychology* (continued)

Junior or senior year, second term, 3 hours.

19 *Advanced Psychology* *Honor Course*

Senior year, first term, 3 hours.

Includes a more extended study of subjects selected from those of the elementary course and in addition a study of selected topics from social, applied, and abnormal psychology.

Prerequisite: course 18.

20 *Advanced Psychology* (continued) *Honor Course*

Senior year, second term, 3 hours.

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EDUCATION

Professor ELLIOTT, courses 33–36, 44

Professor PAYSON, courses 31, 32

Associate Professor CROW, courses 37, 43–45

Associate Professor SAMPSON, courses 38–40

Assistant Professor GENTRY, courses 39–42

Students who are candidates for certificates to teach in the secondary schools of New Jersey are required by the Department of Public Instruction to complete as a minimum requirement the amount of history of education given in courses 31 and 32, the amount of psychology included in courses 17, 18, 33, and the work in secondary education offered in course 34. Satisfactory record in these courses is accepted by the State Board of Examiners in lieu of examinations in those subjects and completes the requirements for the Limited Secondary Certificate for a college graduate. The other requirements are satisfied by the completion of the undergraduate curriculum, in which careful attention should be given to the election of majors and minors. Candidates for teaching should consult the head of the department of education for detailed information. It is recommended that all prospective teachers elect in addition courses 35 and 36. Properly qualified students may take course 37 in place of one of these.

Increased provision is now made for the training of teachers of agriculture in secondary schools. The student who pursues this course follows the special curriculum outlined on page 69.

31 *History of Education*

Junior or senior year, first term, 3 hours.

A study of the history of education from the earliest times through the Renaissance and Reformation periods.

32 *History of Education* (continued)

Junior or senior year, second term, 3 hours.

The great educational movements and the eminent educators from the Renaissance period to the present time. Application of theories to modern practice, force of education as a factor in civilization.

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33 *Educational Psychology*

Senior year, first term, 3 hours.

Includes the application of the laws and methods of general psychology to the problems of education, with emphasis upon the learning process and the measurement of individual and group differences.

Prerequisites: courses 17, 18.

34 *Secondary Education*

Senior year, second term, 3 hours.

Includes a survey of secondary education, the history of secondary education, types of secondary schools in Europe and the United States, contemporary problems in secondary education.

Prerequisites: courses 17, 18, 31, 32.

35 *Principles of Education* *Honor Course*

Senior year, either term, 3 hours.

This course, an introduction to educational theory, considers such topics as social factors in education; aims of education; the laws of learning, interest, discipline, the curriculum.

Prerequisites: courses 17, 18, 31, 32.

36 *Educational Sociology*

Senior year, first term, 3 hours.

Prerequisites: courses 17, 18, 31, 32.

[Omitted 1919–1920]

37 *Educational Administration* (Introductory Course)

Senior year, first term, 3 hours.

Considers problems of school finance, the measurement of school efficiency, school records and school reports, national and state legislation.

38 *Methods of Teaching Agriculture*

Senior year, first term, 3 hours.

The topics considered include: the principles of teaching agriculture; recitation; laboratory and field exercises; lesson plans; equipment and teaching devices.

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39 *Agriculture in the High School*

Senior year, second term, 3 hours.

Among the topics considered are: federal and state legislation; curricula and courses of study; the daily program; co-operation with rural life activities.

40 *Practice Teaching in the Agricultural High School*

Senior year, second term, 2 or 3 hours.

This course provides for practice teaching in high schools offering agriculture as a vocational subject. Regular reports covering assigned reading and teaching practice are required.

41 *Principles and Methods of Teaching*

Junior year, first term, 3 hours.

A course in principles and methods of teaching based upon psychology for students preparing to be teachers of vocational agriculture.

42 *School Management*

Junior year, second term, 3 hours.

An elementary course in school administration and management for students preparing for vocational teaching in agriculture.

Graduate Courses

43 *Methods and Measurements in Education*

Graduate and senior elective, either term, 3 hours.

This course involves a study of standard tests and scales. Conducting a local survey constitutes a part of the course and is the basis for developing technique in administering tests and interpreting results.

44 *Educational Measurements* (Advanced Course)

Graduate and senior elective, either term, 3 hours.

A study of tests and scales that have been derived for the various school subjects; the theory underlying their derivation; practice in the use of scales; the preparation of standard tests and the statistical treatment of results.

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45 *Educational Administration* (Advanced Course)

Graduate and senior elective, second term, 3 hours.

The purpose of this course is to summarize the principles developed in course 37 and to apply them to the fields of county, state, and national education.

[Omitted 1919–1920]

HISTORY OF ART

Professor VAN DYKE, course 51

Mr. DEWALD, course 52

51 *Sculpture and Painting*

Senior year, first term, 2 hours (equated as 1); required in the liberal courses.

The history and criticism of these arts from their beginning to the present time. (Frothingham and Marquand's *History of Sculpture* and Van Dyke's *History of Painting*.

52 *Architecture*

Senior year, second term, 2 hours (equated as 1); required in the liberal courses.

A course of lectures on the history of architecture. These lectures are correlated with those of the preceding course. (Hamlin's *History of Architecture*.

53 *The History of Architecture*

Junior or senior year, first term, 3 hours.

The entire field of architectural history is covered by means of lectures, recitations, and conferences in which the students are required to report each week upon assigned reading.

[Omitted 1919–1920]

54 *The History of Architecture* (continued)

Junior or senior year, second term, 3 hours.

[Omitted 1919–1920]

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55 *Architectural Design*

Senior year, first term, recitation 2 hours, drawing 5 hours.

The classic orders with the principles of shades, shadows, and perspective. The drawing period is devoted to the preparation of elementary design and wash drawings. (Esquié's *Vignole*)

[Omitted 1919–1920]

56 *Architectural Design* (continued)

Senior year, second term, recitation 2 hours, drawing 5 hours.

[Omitted 1919–1920]

NOTE.—Courses 57 and 58 are offered in alternate years as substitutes for the required course 52 to those who, having taken 53 and 54, do not wish to continue with 55 and 56.

57 *Italian Art*

Senior year, second term, recitation or lecture 1 hour.

The sculpture and the painting of the Italian Renaissance. Required reading from various works is assigned.

[Omitted 1919–1920]

58 *Medieval Art*

Senior year, second term, recitation or lecture 1 hour.

The Art of the Middle Ages from the early Christian period to the Renaissance. Reading from various works assigned.

[Omitted 1919–1920]

MUSIC

Mr. MCKINNEY

59 *Musical History and Appreciation*

Junior or senior year, first term, 3 hours.

Designed to develop musical taste and appreciation. History of music down to Beethoven; acquaintance with representative composers and their works by means of illustrations. Lectures and collateral reading.

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60 *Musical History and Appreciation* (continued)

Junior or senior year, second term, 3 hours.

History of romantic and modern music. Lectures, musical illustrations, and collateral reading.

HISTORY

Professor LOGAN, courses 61–69

Associate Professor KULL, courses 70–78

Courses 61 and 62 must be taken by students electing other courses in European history; similarly, courses 70 and 71 are required of those wishing to do advanced work in American history.

61 *Western Europe*

Sophomore, junior, or senior year, first term, 3 hours.

Europe in the Middle Ages. Textbook, lectures, recitations, required reading. Downfall of Rome, Teutonic institutions, development of the Church, feudalism, national development, medieval industry and commerce, town and country life, revival of classical learning.

62 *Modern Europe*

Sophomore, junior, or senior year, second term, 3 hours.

A continuation of course 61. Protestant reform, scientific discoveries, empire building, industrial revolutions, political history of the great states.

63 *Political and Constitutional History of England*

Junior or senior year, first term, 3 hours.

Emphasis upon constitutional development, 1066–1485. Jury, courts, royal officials, parliament, representation, law, king and council. Intensive study of a few documents supplements textbook and lectures.

64 *Political and Constitutional History of England* (continued)

Junior or senior year, second term, 3 hours.

Modern institutions of Great Britain and the British Empire.

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65 *Advanced History of Modern Europe*

Junior or senior year, first term, 3 hours.

French Revolution in its influence upon the world in the nineteenth century, league of nations following the Napoleonic wars, liberalism, parliamentary reforms, development of science and industry, nationalistic struggles.

66 *Advanced History of Modern Europe* (continued)

Junior or senior year, second term, 3 hours.

Europe since 1870. Political and industrial strife, causes of the World War. Political radicalism and the Russian Revolution.

67 *History of Colonization*

Junior or senior year, first term, 3 hours.

History, principles, and methods of colonization, with special reference to the expansion of Europe in America.

An advanced course.

68 *Social and Economic History of the American Colonies*

Junior or senior year, second term, 3 hours.

An advanced course.

69 *Social and Economic History of the Middle Ages*

Junior or senior year, second term, 3 hours.

An advanced course.

70 *Development of the United States to 1829*

Sophomore, junior, or senior year, first term, 3 hours.

Introduction to American history: though primarily political, the course relates all determining phases of American life. Evolution of democracy in the United States constitutes the main thread of the course.

71 *Development of the United States since 1829*

Sophomore, junior, or senior year, second term, 3 hours.

Continuation of course 70: Jacksonian democracy, expansion and conflict; reconstruction, the new nation, and the end of isolation.

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72 *The Far West and the Industrial Age (1865–1920)*

Junior or senior year, first term, 3 hours.

Recent and contemporary American politics with their social and economic backgrounds, and sectional rivalries: new industrialism, Far West, debtor farmer, rise of discontent, third parties, decline of *laissez-faire;* imperialism, the Great War.

73 *Social and Industrial History of the United States (1760–1860)*

Junior or senior year, second term, 3 hours.

The people, agriculture, commerce, industrial revolution, slavery; travel; domestic life, manners, and arts; church, education, newspapers, sports, reform movements.

74 *American Revolution*

Junior or senior year, first term, 3 hours.

A study of the formation of government in the United States: the constitutional debate of the generation 1763–1788, culminating in our federal system.

[Given 1921–1922 and alternate years]

75 *History of the West*

Junior or senior year, second term, 3 hours.

Advance of the frontier; political and industrial development of the West and its influence on national development through reactions upon the East.

[Given 1921–1922 and alternate years]

76 *The Virginia Dynasty*

Junior or senior year, first term, 3 hours.

American political history, 1789–1829, during which time the old South under Virginia leadership was in control of the federal government. American institutions, civilization, and psychology.

[Given 1920–1921 and alternate years]

77 *When "Cotton was King"*

Junior or senior year, second term, 3 hours.

American political history, 1829–1860, when the lower South came into control of the federal government. Jacksonianism; slavocratic civilization; struggle of South and East for control of the West.

[Given 1920–1921 and alternate years]

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Graduate Course

78 *Problems in the History of the West*

Graduate and senior course; offered as there may be demand; credit arranged.

Seminar: general study of a limited field and the working of a problem within it by each student.

HISTORY AND POLITICAL SCIENCE

Professor SCOTT

Mr. GRAHAM

Major—Junior year: 83–86; senior year: 87–94.

Minors may be chosen in American and European history, constitutional history of England, Roman law, history of education and education, logic, history of philosophy, mathematics (calculus), and English.

81 *Civics*

Sophomore year, first term, 2 hours; required in all courses.

Lectures on citizenship and government; quizzes and practical exercises.

82 *Civics* (continued)

Sophomore year, second term, 2 hours; required in all courses.

83 *History of Civilization*

Junior or senior year, first term, 3 hours.

Guizot's *History of European Civilization* is used as a guidebook. Collateral readings are assigned.

84 *Elements of Political Science*

Junior or senior year, second term, 3 hours.

Fundamentals of the general subject are taught by means of a textbook. Special attention is given to the theory and operation of the federative principle in our American political system.

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85 *Elements of Law and Jurisprudence*

Junior or senior year, first term, 3 hours.

Robinson's *Elementary Law* is used as a textbook; special topics are assigned as subjects of study and discussion.

86 *International Law*

Junior or senior year, second term, 3 hours.

Lectures; subjects assigned for special study.

87 *Constitutional Law: Textbook*

Junior or senior year, second term, 3 hours.

Textbook: McClain's *Constitutional Law in the United States.* Cases are assigned to individual members of the class for analysis.

88 *Economics*

Junior or senior year, first term, 3 hours.

Taussig's *Principles of Economics* is used as a textbook.

89 *Economics* (continued)

Junior or senior year, second term, 3 hours.

90 *Business Management*

Junior or senior year, first term, 3 hours.

General business principles: the finance, accounting, organization, internal management of a business concern and the marketing of its product. Lectures and assigned readings; practical exercises.

91 *Money and Banking*

Junior or senior year, first term, 3 hours.

While brief treatment is accorded the history and theory of money and banking, the course deals chiefly with banking practice. Lectures and assigned readings; practical exercises.

92 *International Trade and Tariffs*

Junior or senior year, second term, 3 hours.

Theory, history, and present status of international trade. Tariff policies of important commercial nations with special consideration of the United States. Lectures and assigned readings; individual topics for study.

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93 *Constitutional Law: Cases*

Senior year, first term, 3 hours.

Wambaugh's *Cases on Constitutional Law* together with the *Reports of the Supreme Court of the United States* furnish material for analysis. Students are required to search after the significance and scope of each case in establishing or modifying doctrines of the fundamental law.

94 *Constitutional Law: Cases* (continued)

Senior year, second term, 3 hours.

LATIN LANGUAGE AND LITERATURE

Professor KIRK

Major—Junior year: 109–115; senior year: 116–121.

Minors may be chosen in history of education and education, Greek, English and other modern languages, and history.

The classical major is indicated under Greek Language and Literature.

101 *Latin Prose Literature*

Freshman year, first term, 2 hours.

102 *Latin Poetry*

Freshman year, first term, 2 hours.

103 *Latin Prose Literature* (continued)

Freshman year, second term, 2 hours.

104 *Latin Poetry* (continued)

Freshman year, second term, 2 hours.

105 *Horace*

Sophomore year, first term, 2 hours.

106 *Latin Literature*

Sophomore year, first term, 1 hour.

107 *Pliny or Seneca*

Sophomore year, second term, 2 hours.

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108 *Latin Literature*
Sophomore year, second term, 1 hour.

109 *Terence*
Junior or senior year, first term, 2 hours.

110 *Grammar and Composition*
Junior or senior year, first term, 1 hour.

111 *Lucretius*
Junior or senior year, first term, 3 hours.

112 *Sallust and Nepos*
Junior or senior year, second term, 2 hours.

113 *Grammar and Composition*
Junior or senior year, second term, 1 hour.

114 *Cicero*
Junior or senior year, second term, 2 hours.

115 *Life and Times of Cicero*
Junior or senior year, second term, 1 hour

116 *Caesar*
Junior or senior year, first term, 2 hours.

117 *Grammar and Composition*
Junior or senior year, first term, 1 hour.

118 *Ovid, Tibullus, Propertius*
Junior or senior year, first term, 3 hours.

119 *Virgil*
Junior or senior year, second term, 3 hours.

120 *Tacitus*
Junior or senior year, second term, 2 hours.

121 *Grammar and Composition*
Junior or senior year, second term, 1 hour.

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122 *Roman Law*

Junior or senior year, first term, 3 hours.

123 *Roman Law*

Junior or senior year, second term, 3 hours.

GREEK LANGUAGE AND LITERATURE

Professor BEVIER

Sophomore electives: 136 and 137 or 138.

Major—(not given 1919–1920)

Classical Major—Junior year: (in Greek) 139 and 140 or 141, and (in Latin) 109–115; senior year: (in Greek) 142 and 143, and (in Latin) 116–121.

Minors may be chosen in Roman law, history of philosophy, history of education, education, history of architecture, English and other modern languages.

131 *Elementary Greek*

Freshman year, first term, 5 hours.

A course in elementary Greek is open to students who have offered a modern language in place of Greek at entrance. Students choosing this course are obliged to continue with course 132 during the second term and with courses 133 and 134 during the sophomore year.

132 *Xenophon and Homer*

Freshman year, second term, 5 hours.

Portions of the *Anabasis* and of the *Iliad* or the *Odyssey* are read in preparation for course 133.

Prerequisite: course 131.

133 *Homer*

Freshman or sophomore year, first term, 4 hours.

Selections from the *Iliad* or the *Odyssey*. Drill in Homeric forms and syntax, and in prose composition.

134 *Herodotus*

Freshman or sophomore year, second term, 4 hours.

Selections from Herodotus. Sight reading from Herodotus and Xenophon. Drill in Ionic forms and syntax, and in prose composition.

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135 *Lysias*

Freshman or sophomore year, second term, 4 hours.

Selected orations of Lysias. Athenian court procedure and the development of oratory in the fifth century before Christ. Exercises in prose composition.

136 *Plato*

Sophomore or junior year, first term, 3 hours.

Selections from Plato include the *Apology*, the *Crito*, and the *Phædo*. Sight reading from the *Memorabilia* of Xenophon.

137 *Demosthenes*

Sophomore or junior year, second term, 3 hours.

Demosthenes's *Oration on the Crown*. Sight reading from Aeschines.

138 *Aristophanes or Euripides*

Sophomore or junior year, second term, 3 hours.

Selected dramas. The development of tragedy and comedy with illustrative readings.

139 *The Historians*

Junior or senior year, first term, 3 hours.

Thucydides, Book VII, and other selections. Sight reading from Herodotus and Xenophon.

140 *Attic Oratory*

Junior or senior year, second term, 3 hours.

Selected orations of Antiphon, etc.

141 *Lyric Poetry*

Junior or senior year, second term, 3 hours.

Selections from the lyric poets. The lyric meters.

142 *The Drama*

Junior or senior year, first term, 3 hours.

Selected dramas of Aeschylus and Sophocles.

143 *The Philosophic Dialogue*

Junior or senior year, second term, 3 hours.

Plato's *Republic*.

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HEBREW

Dr. RAVEN

These courses are intended especially for seniors preparing for the ministry, although they are open to other seniors.

151 *Hebrew*

Junior or senior year, first term, 3 hours.

Hebrew grammar. Pronunciation. Translation and analysis of simple historical selections of the Old Testament.

152 *Hebrew*

Junior or senior year, second term, 3 hours.

Hebrew syntax. Rapid reading of selected portions of the poetical books of the Old Testament. Hebrew vocabulary.

ENGLISH LANGUAGE AND LITERATURE

Professor WHITMAN, courses 161, 167, 168, 175–180

Professor BARBOUR, course 162

Associate Professor TWISS, courses 161, 163–166, 171–174

Assistant Professor HALE, courses 161, 163–166, 169–172

Mr. E. F. JOHNSON, courses 161, 163–166, 171, 172

Major —Junior year: 169–172; senior year: 173–176.

Minors may be chosen in Latin, Greek, modern foreign languages, history, history of education, education, political science, art, philosophy, and psychology.

161 *Essays*

Freshman, sophomore, and junior years, 1 each term; senior year, 1 first term; required of all students in the four-year courses.

During the freshman and sophomore years each student prepares one essay during each term on a subject selected under the direction of the department of English. In the junior year and in the first term of the senior year, each student makes at least one written report of not less than 1,200 words on some subject connected with his elective major, or with the technical department chosen. This, after acceptance by the head of the department concerned, is submitted to

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the department of English to be graded as an exercise in English composition. In the second term of the senior year no essays are required except the graduation thesis, which in the liberal courses is prepared under the direction of the professor in charge of the elective major, and in the technical courses under the direction of the head of the department.

The Librarian responds to requests for lists of books and articles relating to the subjects assigned and students are expected to make these exercises occasions for a widened acquaintance with literature.

162 *Public Speaking*

Freshman year, 1 hour a week; other years, 4 times each term, except junior and senior years in technical courses; twice each term for these.

Declamations from masterpieces of oratory and extempore speaking on current topics and questions of vital issue are required during the freshman year and first year of the short course, and original orations and extempore speaking during the sophomore year and second year of the short course. In the junior and senior years original orations and extempore speaking are required in the arts, letters, and general science courses; in the technical science courses extempore speaking alone is required. These are prescribed for all students except those taking the short courses in Agriculture and practical clay-workers in the short course in Clay-working.

163 *Rhetoric and Composition*

Freshman year, first term, 1 hour.

The theory of rhetorical writing, emphasizing the logical organization of a composition, and the structural principles of unity, coherence, and emphasis; the fundamentals of correct and effective form; introduction to the types of prose. The writing and criticism of themes; conference.

164 *Rhetoric and Composition* (continued)

Freshman year, second term, 1 hour.

165 *History of English Literature*

Freshman year, first term, 2 hours in the technical science courses, 3 hours in the liberal courses.

An outline course in the history of English literature. Supplementary readings, illustrating periods and types.

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166 *History of English Literature* (continued)

Freshman year, second term, 2 hours in the technical science courses, 3 hours in the liberal courses.

167 *English Drama*

Sophomore, junior, or senior year, first term, 3 hours.

The English drama from the miracle plays to 1642. Specimens of the pre-Elizabethan drama and of the chief dramatists from 1580 to 1640 (Shakespeare excepted) are read and discussed.

168 *Shakespeare*

Sophomore, junior, or senior year, second term, 3 hours.

A critical and appreciative study of selected plays, with especial attention to the development of Shakespeare as a dramatic artist.

169 *American Literature*

Junior or senior year, first term, 3 hours.

The history of American literature; class and supplementary reading, with reports. A principal theme of the course is: the English source relations and the national independence of American literature.

170 *American Literature* (continued)

Junior or senior year, second term, 3 hours.

171 *Composition*

Sophomore year, first term, 3 hours.

The essentials of correct and vigorous writing; the attributes of literary style; the writing of special types including technical and industrial models; criticism and conference.

172 *Composition* (continued)

Sophomore year, second term, 3 hours.

173 *Literary Criticism*

Junior or senior year, first term, 3 hours.

The analysis and criticism of literature; social relationships, origins and evolution; art elements, types; principles and tendencies of criticism. Study of classical examples; supplementary readings and reports.

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174 *Literary Criticism* (continued)

Junior or senior year, second term, 3 hours.

175 *Growth of English Fiction*

Junior or senior year, first term, 3 hours.

Historical development of narrative prose fiction from the medieval period to the Victorian Age. Representative novels and short stories are read and analyzed to illustrate the leading principles and tendencies of the art of fiction.

176 *Short Story Writing*

Junior or senior year, second term, 3 hours.

Practical course in the principles of short story writing. Psychology of story writing; plot construction; point of view; dialog. Writing of original descriptions, character sketches, and several short stories required.

177 *English Prose of the Nineteenth Century*

Junior or senior year, first term, 3 hours.

A course of lectures, recitations, readings, and reports upon Carlyle, Ruskin, Arnold, and Newman.

178 *English Poetry of the Nineteenth Century*

Junior or senior year, second term, 3 hours.

A course of lectures, recitations, readings, and reports upon Wordsworth, Coleridge, Byron, Shelley, Keats, Tennyson, and Browning.

179 *Old English* *Honor Course*

Senior year, first term, 3 hours.

An elementary course in the grammar and literature of Old English. Cook's *First Book in Old English* is used as a textbook and one of the longer poems is read entire.

180 *Middle English* *Honor Course*

Senior year, second term, 3 hours.

Selections in prose and verse from Cook's *Literary Middle English Reader*, Osgood's edition of *The Pearl*, Langland's *Piers Plowman;* readings in Chaucer.

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ROMANCE LANGUAGES

Professor DAVIS, courses 183–186, 189, 190, 201–204

Professor BILLETDOUX, courses 191–194, 205–210

Associate Professor HAUCH, courses 181, 182

Assistant Professor KIMBALL, courses 181–184, 187, 188

Mr. CLARE, courses 181–184

Italian and Spanish cannot be begun in the same year.

Major in French—Junior year: 183, 184 (187, 188), with 185, 186; senior year: 187, 188 (191, 192), with 189, 190.

Major in Spanish—Junior year: 207—210.

Minors may be chosen in Latin, English, German, Greek, education, and Romance languages.

French

In addition to the curriculum courses, students of French may attend the lectures and conversation classes of the "Alliance française de New Brunswick."

181 *French A: Grammar*

Freshman year, first term, 4 hours; sophomore or junior year, first term, 3 hours.

Beginners' course. Rudiments of the grammar; pronunciation, inflection, the elementary laws of syntax and their application. Translation of simple prose and written exercises in composition. Oral drill, with dictation and tests.

182 *French A: Reading*

Freshman year, second term, 4 hours; sophomore or junior year, second term, 3 hours.

Translation of selections from modern prose writers, with constant reference to morphology and idiom. (Kuhn's *French Reading for Beginners*, Koren and Chapman's *French Reader*, Aldrich and Foster's *French Reader*).

Freshmen devote one hour a week to inflection, syntax, and composition.

Prerequisite: course 181 or one year of French in school.

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183 *French B: Reading*

Freshman year, first term, 4 hours; sophomore, junior, or senior year, first term, 3 hours.

The Romantic School; texts of various writers from Rousseau to Hugo, with brief presentation of the authors' lives, writings, and style.

Freshmen devote one hour a week to inflection, syntax, and composition.

Prerequisite: course 182 or two years of French in school.

184 *French B: Reading* (continued)

Freshman year, second term, 4 hours; sophomore, junior, or senior year, second term, 3 hours.

Study of the novel, with special attention to realism. Such authors as Balzac, Flaubert, Daudet, and Maupassant are read.

Freshmen devote one hour a week to inflection, syntax, and composition.

185 *French B: Composition*

Junior or senior year, first term, 3 hours.

Written and oral translation of English exercises into French in connection with systematic study of the grammar, beginning with a review of irregular verbs. Dictation and written tests. Conducted in French.

Prerequisite: one year of French in college or two in school.

186 *French B: Composition* (continued)

Junior or senior year, second term, 3 hours.

Covers in detail the syntax of all the parts of speech.

187 *French C: Reading*

Freshman year, first term, 4 hours; sophomore, junior, or senior year, first term, 3 hours.

A study of standard prose in both novel and drama, especially the writings of Hugo, Sand, Balzac, Flaubert, and Scribe.

Freshmen devote one hour a week to inflection, syntax, and composition.

Prerequisite: course 184 or three or more years of French in school.

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188 *French C: Reading* (continued)

Freshman year, second term, 4 hours; sophomore, junior, or senior year, second term, 3 hours.

Further study of modern prose writers, particularly Augier, Daudet, Loti, Dumas *fils*, Sardou, and Rostand.

Freshmen devote one hour a week to inflection, syntax, and composition.

189 *French C: Composition*

Senior year, first term, 3 hours.

Written and oral translation of connected passages of English into French in connection with a special review of the syntax of the verb. Dictation and written tests. Conducted in French.

Prerequisite: course 186.

190 *French C: Composition* (continued)

Senior year, second term, 3 hours.

Preparation in French of brief compositions on assigned topics of wide range, followed by corrections in class.

191 *French D: Reading*

Sophomore, junior, or senior year, first term, 3 hours.

A study of the dramatic literature of the seventeenth and eighteenth centuries, particularly that of Corneille, Racine, Molière, Voltaire, and Beaumarchais.

Prerequisite: course 188.

192 *French D: Reading* (continued)

Sophomore, junior, or senior year, second term, 3 hours.

A study of modern playwrights, with rapid reading and synopses.

Graduate Courses

193 *Classic French Literature*

Graduate course, first term, 3 hours.

A critical and comparative study of the evolution of French literature in the seventeenth century, from Malherbe to Fénelon, with analysis of significant works of the great writers.

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194 *Classic French Literature* (continued)

Graduate course, second term, 3 hours.

Italian

201 *Italian A: Grammar*

Junior or senior year, first term, 3 hours. For beginners.

Pronunciation, inflection, the laws of syntax and their application. Oral and written exercises in composition. (Phelps's *Italian Grammar*).

[Omitted 1919–1920]

202 *Italian A: Reading*

Junior or senior year, second term, 3 hours.

Translation and sight reading of simple prose. Composition and oral exercises. (Marinoni's *Italian Reader*, Bowen's *Italian Reader*, Wilkins and Altrocchi's *Italian Short Stories*)

Prerequisite: course 201.

[Omitted 1919–1920]

203 *Italian B: Reading* *Honor Course*

Senior year, first term, 3 hours.

A study of modern Italian literature. Manzoni, De Amicis, Fogazzaro, D'Annunzio, Carducci. Composition and oral practice.

Prerequisite: course 202.

[Omitted 1919–1920]

204 *Italian B: Reading* (continued) *Honor Course*

Senior year, second term, 3 hours.

A study of Dante's *Divina Commedia* with collateral reading. Composition and oral practice.

[Omitted 1919–1920]

Spanish

205 *Spanish A: Grammar*

Sophomore, junior, or senior year, first term, 3 hours. For beginners.

Pronunciation, inflection, the laws of syntax and their application. Writing from dictation, oral and written exercises in composition. (Hills and Ford's *First Spanish Course*)

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206 *Spanish A: Reading*

Sophomore, junior, or senior year, second term, 3 hours.

Translation and sight reading of graded readers and short stories, with composition and oral exercises.

Prerequisite: course 205 or one year of Spanish in school.

207 *Spanish B: Reading*

Sophomore, junior, or senior year, first term, 3 hours.

A study of modern fiction: Valera, Galdós, Alarcón, Ibáñez, Pereda.

Prerequisite: course 206 or two years of Spanish in school.

208 *Spanish B: Reading* (continued)

Sophomore, junior, or senior year, second term, 3 hours.

Translation and analysis of modern dramas: Larra, Tamayo y Baus, Echegaray, Quintero, Galdós, Benavente.

209 *Spanish B: Composition*

Junior or senior year, first term, 3 hours.

Oral and written exercises in composition, with constant practice in conversation.

Prerequisite: course 206 or two years of Spanish in school.

[Offered 1920–1921]

210 *Spanish B: Composition* (continued)

Junior or senior year, second term, 3 hours.

GERMAN LANGUAGE AND LITERATURE

Professor NEWTON, courses 215, 216, 227–230, 232

Associate Professor PAYSON, courses 213, 214, 221–226

Associate Professor HAUCH, courses 211, 212, 217–220, 231

Major —Junior year: 223–226; senior year: 227–230.

Minors may be chosen in European history, English, Romance languages, education, and history of philosophy.

Courses for Freshmen

211 *German A: First Year*

First term, 4 hours, for students who have entered college without German.

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Thorough drill in pronunciation, inflections, and elements of syntax; composition; translation.

212 *German A: First Year* (continued)

Second term, 4 hours.

Translation and composition continued; special drill in the strong and irregular verbs.

213 *German B: Third Year*

First term, 4 hours, for students who have entered with two years of German.

Rapid translation of recent German fiction; composition; conversation.

214 *German B: Third Year* (continued)

Second term, 4 hours.

Translation of selected novels and essays; composition; conversation.

215 *German C: Fourth Year*

First term, 4 hours, for students who have entered with three years of German.

The German drama; literary and scientific German; topics from German literature.

216 *German C: Fourth Year* (continued)

Second term, 4 hours.

A course in German history based on selections from the standard German historians; literary and scientific German; topics from German literature.

Courses for Sophomores and Juniors

217 *German D: First Year*

Sophomore or junior year, first term, 3 hours, for students who have had no German.

Thorough drill in elementary grammar and composition; translation of narrative German.

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218 *German D: First Year* (continued)

Sophomore or junior year, second term, 3 hours.

Grammatical drill and composition continued; rapid translation of narrative and colloquial German.

219 *German E: Second Year*

Sophomore year, first term, 3 hours, for students who have taken courses 211 and 212.

Translation of the more popular German classics.

220 *German E: Second Year* (continued)

Sophomore year, second term, 3 hours.

Translation of German classics continued; scientific German.

221 *German F: Advanced Elective*

Sophomore or junior year, first term, 3 hours.

Rapid translation of nineteenth century literature; composition; conversation.

222 *German F: Advanced Elective* (continued)

Sophomore or junior year, second term, 3 hours.

223 *German G: Eighteenth Century Literature*

Junior year, first term, 3 hours.

An advanced elective.

224 *German G: Eighteenth Century Literature* (continued)

Junior year, second term, 3 hours.

225 *German H*

Junior year, first term, 3 hours.

The same as course 223, extended.

226 *German H* (continued)

Junior year, second term, 3 hours.

The same as course 224, extended.

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Courses for Seniors

227 *German I: Romantic Literature*

Senior year, first term, 3 hours.

The Romantic School (1800–1840): Heinrich von Kleist, Tieck, and others.

[Omitted 1919–1920]

228 *German I: Romantic Literature* (continued)

Senior year, second term, 3 hours.

[Omitted 1919–1920]

229 *German J: Post-Romantic Literature*

Senior year, first term, 3 hours.

The post-romantic writers (1840–1900): Uhland, Hebbel, and others.

[Omitted 1919–1920]

230 *German J: Post-Romantic Literature* (continued)

Senior year, second term, 3 hours.

[Omitted 1919–1920]

Graduate Courses

231 *German K: History of Literature*

Graduate course open to candidates for the master's degree.

History of German literature from Gottsched to the death of Goethe.

232 *German L: Nineteenth Century Literature*

Graduate course open to candidates for the master's degree.

Intensive study of the leading writers of the century, with written analyses of their most important works and extensive supplementary reading.

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MATHEMATICS

Professor MORRIS, courses 241, 243, 244, 253, 254, 264, 265
Professor BREAZEALE, courses 241–244, 246, 249, 250
Professor BRASEFIELD, courses 242, 246, 249–252
Assistant Professor GARRETSON, 241–244, 246, 249, 250
Mr. STARKE, courses 241–246, 249, 250

Major—Junior year: 255–258; or 255–257, 259; senior year: 262–265 or 260–263.

Minors may be chosen in astronomy, physics, chemistry, logic, and education.

241 *Algebra*

Freshman year, first term, 4 hours, in the liberal courses and in the technical courses in agriculture and biology.

242 *Algebra and Trigonometry*

Freshman year, first term, 5 hours, in the engineering, chemistry, and ceramics courses.

243 *Plane Trigonometry*

Freshman year, first half of second term, 4 hours, in the liberal courses and in Agriculture.

244 *Solid Geometry*

Freshman year, latter half of second term, 4 hours, in the liberal courses and in Agriculture.

245 *Trigonometry and Analytic Geometry*

Freshman year, second term, 4 hours, in the technical course in biology.

246 *Analytic Geometry*

Freshman year, second term, 5 hours, in the engineering, chemistry, and ceramics courses.

247 *Calculus*

Sophomore year, first term, 3 hours, in the chemistry and ceramics courses.

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248 *Calculus* (continued)
Sophomore year, second term, 3 hours.

249 *Calculus*
Sophomore year, first term, 4 hours, in the engineering courses.

250 *Calculus* (continued)
Sophomore year, second term, 4 hours, in the engineering courses.

251 *Mechanics*
Junior year, first term, 4 hours, in the engineering courses.

252 *Mechanics* (continued)
Junior year, second term, 2 hours.

Elective Courses

253 *Analytic Geometry*
Sophomore, junior, or senior year, first term, 3 hours.

254 *Elementary Calculus*
Sophomore, junior, or senior year, second term, 3 hours.

255 *Advanced Calculus*
Junior or senior year, first term, 3 hours.
Prerequisites: 253, 254.

256 *Advanced Calculus* (continued)
Junior or senior year, second term, 3 hours.

257 *Advanced Analytical Geometry*
Junior or senior year, first term, 3 hours.
Prerequisites: 253, 254.

258 *Theory of Equations*
Junior or senior year, second term, 3 hours.
Prerequisites: 253, 254.

259 *Advanced Algebra*
Junior or senior year, second term, 3 hours.
This course and the preceding are given alternately.
Prerequisites: 253, 254.

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260 *Analytical Mechanics*

Junior or senior year, first term, 3 hours.

261 *Analytical Mechanics* (continued)

Junior or senior year, second term, 3 hours.

262 *Differential Equations*

Senior year, first term, 3 hours.

Prerequisites: 255, 256.

263 *Projective Geometry*

Junior or senior year, second term, 3 hours.

Prerequisites: 253, 254.

264 *Advanced Course in Plane Geometry*

Junior or senior year, first term, 3 hours.

Prerequisites: 253, 254.

265 *Advanced Trigonometry*

Junior or senior year, second term, 3 hours.

Prerequisites: 253, 254.

ASTRONOMY

Professor BREAZEALE

271 *Theoretical and Practical Astronomy*

Junior or senior year, first term, 3 hours.

Spherical astronomy, coordinate systems, theory of astronomical instruments, reduction of observations, method of least squares; exercises in logarithmetic computation; observatory work.

Prerequisites: 253, 254.

[Omitted 1919–1920]

272 *Theoretical and Practical Astronomy* (continued)

Junior or senior year, second term, 3 hours.

Celestial mechanics, fundamental principles and definitions; rectilinear motion, central forces, the potential and attraction of masses; problems of two, three, and n bodies; calculation of orbits; observatory work.

[Omitted 1919–1920]

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PHYSICS

Professor GAGE, courses 281–292

Associate Professor PRATT, courses 281–284

Associate Professor FERGUSON, courses 281–284

Major—Junior year: 285–288; senior year: 289–292.

Minors may be chosen in mathematics, chemistry, astronomy, geology and education.

281 *General Physics*

Sophomore year, first term, lecture 1 hour, recitation 2 or 3 hours, laboratory 2 or 4 hours; also first year in the short course in Clay-working.

A study of those fundamentals of mechanics, wave motion, and heat that are necessary to a liberal education.

282 *General Physics* (continued)

Sophomore year, second term, lecture 1 hour, recitation 2 or 3 hours, laboratory 2 or 4 hours; also first year in the short course in Clay-working.

Includes magnetism, electricity, sound, and light.

283 *Applied Physics*

Sophomore year, first term, lecture 1 hour, recitation 2 or 3 hours, laboratory 2 hours.

This course is more specialized than 281 in that emphasis is placed on the portions of physics which form the basis for technical studies.

284 *Applied Physics* (continued)

Sophomore year, second term, lecture 1 hour, recitation 2 or 3 hours, laboratory 2 hours.

The following courses continue the work begun in the sophomore year and aim to impart a more thorough knowledge of the subjects from both the theoretical and the experimental point of view. Students electing these courses are strongly advised to carry forward their study of mathematics but are not required to do so.

285 *Electricity and Magnetism*

Junior or senior year, first term, recitation 2 hours, laboratory 3 hours.

Includes magnetism, electrostatics, and direct current phenomena.

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286 *Electricity and Magnetism* (continued)

Junior or senior year, second term, recitation 2 hours, laboratory 3 hours.

Alternating currents, electrical oscillations, wireless telegraphy, and other topics of recent development.

287 *Electrical Instruments*

Junior or senior year, first term, recitation 1 hour, laboratory 5 hours.

A study of instruments and methods of measurements which cannot be included in course 285.

288 *Electrical Instruments* (continued)

Junior or senior year, second term, recitation 1 hour, laboratory 5 hours.

289 *Light*

Junior or senior year, first term, recitation 2 hours, laboratory 3 hours.

Emphasis on the physical aspects of the subject, as, for example, interference, diffraction, spectrum analysis, polarization.

290 *Heat*

Junior or senior year, second term, recitation 2 hours, laboratory 3 hours.

A general course including a study of high and low temperatures and thermodynamics.

291 *General Laboratory Course*

Senior year, first term, laboratory 8 hours.

The work is adapted to the needs of the individual student.

292 *General Laboratory Course* (continued)

Senior year, second term, laboratory 8 hours.

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CIVIL ENGINEERING

Professor TITSWORTH, courses 301, 317, 320, 322, 327, 328

Associate Professor A. R. JOHNSON, courses 301, 302, 303, 306, 307, 312, 316, 324, 325

Associate Professor LENDALL, courses 304–306, 309, 310, 313, 318, 323, 326, 330

Associate Professor STEPHENSON, courses 308, 311, 314, 315, 319, 321, 329

Special lectures are given in this department from time to time by men who have attained eminence in the practice of civil engineering.

301 *Descriptive Geometry*

Sophomore year, first term, recitation 2 hours, drafting 3 hours.

A recitation course embracing problems of the point, line, and plane; problems in surface tangencies; intersections and development of surfaces. The drafting course includes accurate construction of problems.

302 *Surveying*

Sophomore year, second term, recitation 2 hours, field practice 3 hours.

Instruments and their adjustments; theory of chain, compass, transit, and plane-table surveying, and leveling; methods of computing areas and laying out and dividing land. Field practice.

303 *Surveying*

Sophomore year, second term, 2 hours.

A course designed to meet the special needs of students in electrical engineering.

304 *Machine Drawing*

Sophomore year, first term, 3 hours.

Dimensional sketches of machine parts and finished drawings made from sketches, conforming as nearly as possible to actual shop practice.

305 *Topography and Lettering*

Sophomore year, second term, 3 hours.

A course in plain and colored topography, in the correct formation of letters, in lettering and proper spacing, in drawing titles for maps.

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306 *Field Practice in Surveying*

Sophomore-junior vacation, 100 hours.

Practical applications in the field of methods of surveying.

307 *Graphic Statics*

Junior year, first term, 3 hours.

A course in the application of graphic methods to represent forces and stresses in framed structures and machines, and in tracing curves to represent statistical data.

308 *Railway Engineering*

Junior year, second term, recitation 2 hours, field practice 3 hours.

Reconnaissance and location. Problems in simple, reversed, compound, and transition curves; turnouts, crossings, switches, and frogs.

The field practice includes study and application of necessary field operations for both location and construction.

309 *Mechanics of Materials*

Junior year, first term, 4 hours.

Principles of stress and strain; flexure of beams and columns; resilience; torsion; impact and fatigue.

310 *Masonry Construction*

Senior year, second term, recitation and design 4 hours.

A study of the materials and the classifications of masonry; methods of construction and the principles and practice of the design of foundations, dams, retaining walls, abutments, piers, culverts, and arches.

311 *Field Practice in Railroad Surveying*

Junior-senior vacation, 100 hours.

Reconnaissance, preliminary, and final locations of a short line of railroad are made, including profile levels, cross-sections, and slope stakes.

312 *Theory of Structures*

Junior year, second term, 3 hours.

A study of the character and magnitude of the stresses in roofs and bridges of different types, due to dead and live loads, by both analytic and graphic methods.

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313 *Hydraulic Engineering*

Junior year, second term, recitation 3 hours, laboratory 3 hours.

Hydrostatics; flow of water through orifices and over weirs; flow in pipes, tubes, and canals; stream measurements; hydrodynamics; elements of the design of water-wheels and turbines.

314 *Concrete, Plain and Reinforced*

Senior year, first term, recitation 3 hours, laboratory 3 hours.

Principles of design and application of reinforced concrete for use in construction. Properties of cement and concrete are studied and complete tests of these materials are conducted in the laboratory.

315 *Testing Materials—Laboratory*

Junior year, second term, 3 hours.

Use of testing machines and proper conduct of actual tests of structural materials such as steel, stone, brick, and concrete. Also study of their fundamental characteristics and behavior by means of plotted test curves.

316 *Theory of Structures* (continued)

Senior year, first term, 2 hours.

Continuation of course 312 in the theory and design of structures; the determination of stresses in cantilever, arch, swing, and suspension bridges.

317 *Public Water Supplies*

Senior year, first term, 2 hours.

A study of the means and methods of procuring public water supplies and of their purification for potable and household uses.

318 *Public Water Supplies Design*

Senior year, first term, 3 hours.

Problems in the design of a complete water system.

319 *Highway Engineering*

Senior year, second term, 2 hours.

A lecture and recitation course embracing the principles of road and street construction and maintenance, the investigation of paving materials and the proper methods of applying them.

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320 *Geodetic Surveying and Practical Astronomy*

Senior year, second term, recitation 3 hours, field work 3 hours.

A course treating of higher geodetic and astronomical measurements to determine geodetic position by latitude, longitude, and azimuth; of precise leveling; and of hydrographic surveying. Field work in connection therewith.

321 *Railway Economics*

Senior year, first term, recitation 2 hours, design 3 hours.

Selection of proper grades, and types of structures; study of train resistance; influence of curvature and distance on operating expenses; valuation of property and railway finance. Design of railway yards and structures.

322 *Sewerage*

Senior year, second term, 2 hours.

A study of sanitary methods of treating sewage and of its disposal.

323 *Sewerage Design*

Senior year, second term, 3 hours.

Problems in the design of sewers and sewage disposal plants.

324 *Bridge Design*

Senior year, first term, 4 hours.

The design and shop-drawing of a single track, through plate girder bridge.

325 *Bridge Design* (continued)

Senior year, second term, 3 hours.

The design of a single track, through truss, including the detailing of one of the principal members.

326 *Hydraulic Engineering*

Senior year, first term, 3 hours.

A course similar to 313 especially planned for students in mechanical engineering. Particular attention is given to hydraulic machines.

327 *Engineering Topics*

Senior year, first term, 2 hours.

A course in the discussion of current civil engineering topics.

328 *Engineering Topics* (continued)

Senior year, second term, 2 hours.

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Graduate Courses

329 *Reinforced Concrete Construction*

A special graduate course continuing the work of 314.

330 *Sanitary, Hydraulic, and Irrigation Engineering*

A special graduate course continuing the work of 313.

ELECTRICAL ENGINEERING

Professor THOMPSON, courses 341, 346, 351–354, 356–361

MR. CREAGER, courses 342–345, 347–350, 355

341 *Elements of Direct Current Engineering*

Junior year, first term, 3 hours.

A review of the laws of the electric and magnetic circuit and their application to the dynamo. Study of direct current dynamos and motors; their construction, operation, regulation, characteristics, management, and the methods of testing them. Illustrative problems.

342 *Telephones and Telegraphs*

Junior year, first term, 2 hours.

A study of the physical theory and the principles of operation of various forms of telephonic and telegraphic transmitting and receiving apparatus and systems.

343 *Theory of Electrical Measurements*

Junior year, first term, 1 hour.

A classroom course preparatory for and discussing the theory of the methods of measurement which are used in the laboratory in course 334.

344 *Electrical Laboratory*

Junior year, first term, 5 hours.

This course covers the methods for measuring resistance, current, electromotive forces, capacity, self-induction, the magnetic properties of iron, etc., and the calibration of commercial measuring instruments.

345 *Elements of Direct Current Engineering*

Junior year, first term, 3 hours.

A short combined classroom and laboratory course, elective for chemists, covering the general ground of course 341.

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346 *Elements of Alternating Current Engineering*

Junior year, second term, 5 hours.

An introductory study of the theory of alternating currents, and its application to the construction, characteristics, and operation of alternators, induction and synchronous motors, and transformers. Illustrative problems.

347 *Elements of Alternating Current Engineering*

Junior year, second term, 3 hours.

A short combined classroom and laboratory course, elective for chemists, covering the general ground of course 346.

348 *Dynamo Laboratory*

Junior year, second term, 3 hours.

A course in the operation and testing of series, shunt, and compound wound generators and motors, and their auxiliary apparatus.

349 *Dynamo Laboratory*

Junior-senior vacation, 50 hours.

Supplementary to course 348 and including the operation of transformers, induction motors, and other alternating current machinery.

350 *Illuminating Engineering*

Senior year, first term, 2 hours.

A course devoted to a study of commercial illuminants, their methods of installation, relative efficiencies, and the design of lighting systems.

351 *Advanced Alternating Currents*

Senior year, first term, 4 hours.

An advanced study of the theory of alternating currents and its application to alternating current generators and transformers.

352 *Advanced Alternating Currents* (continued)

Senior year, second term, 4 hours.

An advanced study of synchronous motors, rotary converters, and induction motors. Calculation of alternating current apparatus.

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353 *Electric Power Transmission*

Senior year, first term, 2 hours.

A study of the application of electricity to power transmission with special reference to the methods of transmission line construction and the operating characteristics of transmission lines.

354 *Electric Traction*

Senior year, second term, 3 hours.

The construction, equipment, and operation of different types of electric railways. Application of electric traction to steam road conditions; predeterminations of speed time curves and the power required for different types of runs.

355 *High Voltage Engineering*

Senior year, second term, 2 hours.

A brief course on the phenomena peculiar to high voltage transmission lines and a study of surges and transient phenomena.

356 *Dynamo Laboratory*

Senior year, first term, 5 hours.

Advanced testing of direct current apparatus including the determination of the characteristics, regulation, and efficiency of generators and motors. Elementary alternating current measurements accompanying the classroom work in course 351.

357 *Dynamo Laboratory* (continued)

Senior year, second term, 5 hours.

Experimental studies and tests of alternating current generators and motors, rotary converters, transformers, and auxiliary apparatus; measurement of power in polyphase circuits.

358 *Electrical Design*

Senior year, first term, 2 hours.

The design of a direct current generator or motor.

359 *Electrical Design* (continued)

Senior year, second term, 2 hours.

The design of a transformer, an induction motor, or a switchboard.

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360 *Seminar*

Senior year, first term, 1 hour.

Discussion of articles in current electrical engineering journals.

361 *Seminar* (continued)

Senior year, second term, 1 hour.

MECHANICAL ENGINEERING

Professor HECK

Associate Professor COUCH

The studies given by the department, here described, are combined in related groups instead of being arranged by years.

Machine Drawing and Design

371 *Machine Drawing*

Sophomore year, first term, 5 hours in the mechanical and electrical engineering courses.

Dimensioned sketches and finished drawings of machine parts. Practice in reading drawings. Empirical design of machine parts, with emphasis upon the technique of engineering drawing.

372 *Machine Drawing* (continued)

Sophomore year, second term, 5 hours.

373 *Elements of Machine Design*

Junior year, second term, 3 hours in the electrical engineering course.

Proportioning of machine parts, empirical and rational; design of transmission machinery.

374 *Machine Design*

Senior year, first term, 6 hours.

Proportioning of machine parts, such as fastenings, simple frames, gearing, shafting, and bearings. Analysis of actual designs. Original designing of simple machines to meet specified conditions.

375 *Machine Design* (continued)

Senior year, second term, 6 hours.

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Machine Construction

376 *Machine Elements*

Sophomore year, first term, 4 hours in the mechanical and electrical engineering courses.

A course of recitation, lectures, and shop visits, covering the general form of common machines and their constructive details.

377 *Constructive Processes*

Sophomore year, second term, 5 hours.

A systematic study, along general lines, of constructive processes in foundry, forge, and machine shop.

378 *Machine Construction*

Sophomore-junior vacation, 100 hours.

Shop work of course 377 continued. Visits of inspection to various shops and manufacturing plants within a range of thirty to sixty miles; note-taking, lectures, and references.

379 *Machine Shop Methods*

Junior year, first term, 3 hours.

A closer study of machine tool operations and of methods, fixtures, etc.

380 *Materials and Tools*

Junior year, second term, 2 hours.

Properties of the materials used in machine construction. Cutting tools and their action.

381 *Industrial Organization*

Senior year, first term, 2 hours.

Textbook and lecture course in the principles of industrial organization.

382 *Industrial Organization* (continued)

Senior year, second term, 2 hours.

383 *Engineering Topics*

Senior year, first term, 2 hours.

References, assigned reading, discussions in class.

384 *Engineering Topics* (continued)

Senior year, second term, 2 hours.

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Mechanics of Materials and of Machinery

385 *Mechanics of Materials*

Junior year, second term, 4 hours in ceramics and in the mechanical and electrical engineering courses.

Properties of engineering materials, strength, elasticity, etc. Theory of beams, columns, shafts, etc. Elementary theory of elasticity.

386 *Mechanism and Kinematics*

Junior year, first term, recitation 2 hours, drafting 5 hours.

A systematic study of mechanism, with examples mostly from the fields of transmission machinery, machine tools, engines, and transportation machinery. Graphical analyses of fundamental mechanisms, going so far as displacements and velocities, and including the layout of gears and cams.

387 *Graphics of Structures and of Machines*

Senior year, first term, recitation 1 hour, drafting 5 hours.

Determination of forces in roof trusses, crane frames, etc., and of stresses in machine members. Analysis of impressed forces in machines, including friction but stopping short of kinetic forces.

388 *Kinematics and Dynamics*

Senior year, second term, recitation or lectures 2 hours, drafting 5 hours.

Velocities and accelerations in linkage mechanisms and with cams and noncircular gears. Inertia force actions in engines, etc., balancing of engines, gyroscopic action, stress in rotating bodies.

Heat and Power Engineering

389 *Steam Engineering*

Junior year, first term, 2 hours; also senior year in the ceramics course.

An elementary descriptive course in steam engineering. Closely associated with laboratory course.

390 *Steam Boilers and Engines*

Junior year, first term, 3 hours.

Concerned chiefly with boilers and their accessories, but covering also the general construction and working of the engine.

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391 *Steam Engineering*

Junior year, second term, 1 hour.

Completion of course 389.

392 *Thermodynamics*

Senior year, first term, 3 hours.

A study of the theory and performance of the steam boiler, engine, and turbine, and of the internal combustion engine.

393 *Thermodynamics*

Senior year, second term, 3 hours.

The general principles of thermodynamics, with review of their application in the steam plant and a closer study of the internal combustion engine; the principles of heating and ventilation and of refrigeration.

394 *Power Plant Engineering*

Senior year, second term, 2 hours.

Layout of plant, selection and combination of units, economics of operation, etc.

Mechanical Engineering Laboratory

395 *Steam Engineering Laboratory*

Junior year, first term, 3 hours; also senior year in the ceramics course.

A short general course on the use and calibration of instruments and the measurement of power.

396 *Mechanical Instruments and Laboratory*

Junior year, second term, recitation 1 hour, laboratory 3 hours.

Use and calibration of instruments for measuring area, fluid volume, weight, pressure (including the indicator), temperature, time, speed, quality of steam, etc.

397 *Mechanical Laboratory*

Junior-senior vacation, 50 hours.

Simple tests of steam engines, turbines, and pumps, of gas engines, of the injector and pulsometer, tests with dynamometers, etc.

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398 *Mechanical Laboratory*

Senior year, first term, 3 hours.

Further and fuller work along the lines of course 397, with testing of materials and some hydraulic experiments. Testing of power units with full analysis of performance and efficiency tests of working plants.

399 *Mechanical Laboratory* (continued)

Senior year, second term, 3 hours.

MECHANICAL DRAWING

Associate Professor A. R. JOHNSON, courses 411–414

Associate Professor LENDALL, courses 413, 414

Associate Professor STEPHENSON, courses 411, 412

411 *Drafting*

Freshman year, first term, 5 hours, in the engineering courses.

Construction of designs; geometric problems; free-hand lettering. Orthographic projections begun. One hour each week is devoted to classroom instruction.

412 *Drafting*

Freshman year, second term, 5 hours, in the engineering courses.

Projections on horizontal, vertical, profile, and supplementary planes; intersection and development of surfaces; elementary machine drawing and sketching; simple isometric projections. One hour each week is devoted to classroom instruction.

413 *Drafting*

Freshman year, first term, 3 hours, in the technical courses in chemistry, ceramics, and biology.

Plain lettering and the drawing of simple geometric figures. Elementary orthographic projection.

414 *Drafting*

Freshman year, second term, 3 hours, in the technical courses in chemistry, ceramics, and biology.

Orthographic projections continued. Intersection and development of surfaces. Isometric projection of simple figures. Free-hand drawing.

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Other courses in mechanical drawing are described in connection with the departments of Civil, Electrical, and Mechanical Engineering, on the preceding pages.

CHEMISTRY

Professor WRIGHT, courses 434, 435, 439, 440, 445, 447

Associate Professor DE REGT, courses 423–428

Assistant Professor LITTLE, courses 429–433, 438, 445, 448

Assistant Professor VAN DER MEULEN, courses 421, 422, 441–446

Mr. HOLLINGER, courses 421, 422

Mr. MEUSER, courses 421, 422, 436, 437

Major—Junior year: 429, 430, 434, 435; senior year: 439, 440.
Prerequisites to major: 421, 422, 427, 428, 438

Minors may be chosen in physics, mineralogy, bacteriology, physiology, botany, mathematics, geology, and education.

421 *General Chemistry*

Freshman year, first term, recitation 1 hour, lectures 2 hours, laboratory 3 or 5 hours; also first year of the short course in Clay-working and sophomore or junior year in elective courses.

422 *General Chemistry* (continued)

Freshman year, second term, recitation 1 hour, lectures 2 hours, laboratory 3 or 5 hours; also first year of the short course in Clay-working and sophomore or junior year in elective courses.

423 *Qualitative Analysis*

Sophomore year, first term, recitation 3 hours, laboratory 8 hours. Prerequisites: courses 421, 422.

424 *Qualitative Analysis* (continued)

Sophomore year, second term, recitation 3 hours, laboratory 8 hours.

425 *Qualitative Analysis*

Sophomore year, first term, recitation 2 hours, laboratory 5 hours; also second year of the short course in Clay-working.

Prerequisites: courses 421, 422.

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426 *Qualitative Analysis* (continued)

Sophomore year, second term, recitation 2 hours, laboratory 5 hours; also second year of the short course in Clay-working.

427 *Qualitative Analysis*

Sophomore, junior, or senior year, first term, recitation 1 hour, laboratory 5 hours.

Prerequisites: courses 421, 422.

428 *Qualitative Analysis* (continued)

Sophomore, junior, or senior year, second term, recitation 1 hour, laboratory 5 hours.

429 *Quantitative Analysis*

Junior or senior year, first term, recitation 1 hour, laboratory 8 hours.

Prerequisites: courses 423, 424; or 425, 426; or 427, 428.

430 *Quantitative Analysis* (continued)

Junior or senior year, second term, recitation 1 hour, laboratory 8 hours.

431 *Quantitative Analysis*

Junior year, first term, recitation 1 hour, lectures 2 hours, laboratory 10 hours.

Prerequisites: courses 423, 424; or 425, 426.

432 *Quantitative Analysis* (continued)

Junior year, second term, recitation 1 hour, lectures 2 hours, laboratory 15 hours.

433 *Quantitative Analysis Laboratory*

Junior-senior vacation, 100 hours quantitative analytical laboratory practice.

434 *Industrial Chemistry*

Junior or senior year, first term, 3 hours.

435 *Industrial Chemistry* (continued)

Junior or senior year, second term, 3 hours.

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436 *Organic Industrial Chemistry*

Senior year, first term, recitation 1 hour, lectures 2 hours.

437 *Organic Industrial Chemistry* (continued)

Senior year, second term, recitation 1 hour, lectures 2 hours.

438 *Elementary Organic Chemistry*

Junior or senior year, second term, 2 hours.

439 *Organic Chemistry*

Senior year, first term, recitation and lectures 3 hours, laboratory 8 or 10 hours.

Prerequisites: courses 421, 422, 427, 428, 438.

440 *Organic Chemistry* (continued)

Senior year, second term, recitation and lectures 3 hours, laboratory 8 hours.

441 *Advanced Inorganic Chemistry*

Senior year, first term, lectures 2 hours, laboratory 3 hours.

442 *Advanced Inorganic Chemistry* (continued)

Senior year, second term, lectures 2 hours, laboratory 3 hours.

443 *Physical Chemistry*

Senior year, first term, 2 hours.

Prerequisite: Calculus.

444 *Physical Chemistry* (continued)

Senior year, second term, 2 hours.

445 *Thesis*

Senior year, second term, 10 hours a week laboratory work.

The subject for thesis is chosen in any division of the department, with the approval of the instructor in charge.

Graduate Courses

446 *Advanced Inorganic Chemistry; Physical Chemistry*

Conference and laboratory research. Work on an assigned problem.

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447 *Advanced Organic Chemistry*

Conference and laboratory research. Work on an assigned problem.

448 *Advanced Quantitative Chemistry*

Conference and laboratory research. Work on an assigned problem.

GEOLOGY AND MINERALOGY

Professor J. V. LEWIS, courses 461–470

Doctor KÜMMEL, course 463

Mr. SAMPSON, courses 461–466

All courses are supplemented by short excursions for the observation of common minerals, rocks, and structures in the field.

461 *Crystallography and Mineralogy*

Junior or senior year, first term, recitation 1 hour, laboratory 5 hours.

The laws of crystallization and their application to minerals; outline of systematic mineralogy; practice in sight recognition of common minerals; determination of unknown specimens.

462 *Mineralogy* (continued)

Junior or senior year, second term, recitation 1 hour, laboratory 3 hours in technical courses, 5 hours in elective courses.

463 *General Geology*

Junior or senior year, first term, 3 hours.

The principles of physical geology, with emphasis on rocks, soils, and topographic forms; outline of historical geology and the leading facts of organic evolution; lectures by the State Geologist on the geology and mineral resources of New Jersey.

464 *General Geology* (continued)

Junior or senior year, second term, 3 hours.

465 *Physiography*

Junior or senior year, second term, 3 hours.

Geographic features of the earth, with special reference to land forms, their development and classification, and their relations to life.

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466 *Engineering Geology*

Junior or senior year, second term, recitation 1 hour, laboratory 2 hours.

The elements of geology with special reference to their bearing upon engineering practice; the interpretation and use of geologic maps.

Graduate Courses

467 *Agricultural Geology*

Senior year or graduate first term, recitation 2 hours, laboratory 3 hours.

The origin and nature of rocks, their transformation into soils, and the subsequent modification of these by natural processes.

Prerequisites: courses 421, 422, 461, 462.

468 *Agricultural Geology* (continued)

Senior year or graduate, second term, recitation 2 hours, laboratory 3 hours.

469 *Economic Geology* *Honor Course*

Senior year or graduate, first term, 3 hours.

Geologic products of value, including ores and other mineral deposits, building stones, clays, coal, petroleum, natural gas, mineral waters, etc., with special reference to North America.

Prerequisites: courses 461, 462; or 463, 464.

470 *Economic Geology* (continued) *Honor Course*

Senior year or graduate, second term, 3 hours.

CLAY-WORKING AND CERAMICS

Professor BROWN

481 *Origin and Nature of Clays*

Sophomore year, first term, recitation 1 hour, lectures 2 hours; also first year, first term, in the short course in Clay-working.

A study of the history of the formation of clays and of their physical and chemical constitution.

482 *Winning and Preparation of Clays*

Sophomore year, second term, recitation 1 hour, lectures 2 hours; also first year, second term, in the short course.

A study of the methods of the winning of clays and the formation of clay wares.

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483 *Ceramic Calculations*

Junior year, first term, 2 hours; also first year, first term, in the short course.

Physical and chemical calculations involved in the preparation and production of ceramic products.

484 *Physical Testing of Clays*

Junior year, first term, recitation 1 hour, laboratory 5 hours; also first year, first term, recitation 1 hour, laboratory 10 hours, in the short course.

Methods of testing and studies of the physical properties of the clays used in the manufacture of crude wares.

485 *Refractory Materials*

Junior year, second term, recitation 2 hours, laboratory 5 hours; also first year, second term, recitation 2 hours, laboratory 10 hours, in the short course.

A story of refractory materials and of their application in industrial operations.

486 *Ceramic Bodies and Glazes*

Senior year, first term, recitation 1 hour, lectures 2 hours, laboratory 10 hours; also second year, first term, in the short course.

A study of the preparation of bodies and glazes and their uses and defects.

487 *Ceramic Bodies and Glazes* (continued)

Senior year, second term, laboratory 8 hours; also second year, second term, in the short course.

488 *Thermochemical Calculations*

Senior year, first term, 3 hours.

Physical and chemical calculations applying to the operation of driers, kilns, and furnaces.

489 *Silicates*

Senior year, second term, 3 hours.

Formation and properties of silicates.

490 *Driers and Kilns*

Senior year, second term, 3 hours; also second year, second term, in the short course.

A study of the operation of driers and kilns.

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491 *Ceramic Construction*

Senior year, second term, designing 8 hours; also second year, second term, in the short course.

A study of the design and construction of driers, kilns, and ceramic installations.

492 *Graduation Thesis*

Senior year, second term, laboratory 8 hours.

AGRICULTURE

Professor LIPMAN, courses 513–518, 560, 561, 563

Professor COOK, course 560

Professor H. R. LEWIS, courses 530–532, 567

Professor BLAIR, courses 508–510, 562, 563

Professor REGAN, courses 525, 529, 551–553, 565, 566

Professor F. G. HELYAR, courses 501, 519–523, 564

Associate Professor APP, courses 506, 507, 558, 559

Associate Professor J. P. HELYAR, course 511

Associate Professor FARLEY, courses 536, 539–542, 568

Assistant Professor SCHERMERHORN, courses 543–546, 569

Assistant Professor THOMPSON, courses 530–534

Assistant Professor MUSGRAVE, courses 502–505, 554, 555

Assistant Professor KLINCK, courses 547, 548, 556, 557

Assistant Professor ARMSTRONG, courses 535–538, 542

Dr. LEONARD, courses 511, 512

Dr. SHIVE, course 570

Mr. BUTTON, courses 524, 526–528

Mr. SEAVER, courses 535–538, 540

Mr. SKELLY, courses 519–523

(The short courses in Agriculture are listed on pages 86, 87, and 163.)

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501 *General Agriculture*

Freshman year, first term, lectures 2 hours, laboratory 3 hours.

A study of agriculture as an industry; its relation to society; the field, special problems and relationships of each of the various branches of agriculture.

502 *Soils*

Freshman year, second term, recitation 2 hours, laboratory 3 hours.

Origin, formation, and composition of soils; their physical and chemical characteristics. Laboratory practice illustrating the principles of capillarity, specific gravity, moisture holding capacity, and tilth of soils.

503 *Soil Surveying*

Sophomore-junior vacation, 50 hours.

Plane table surveying and mapping of the different soil types The course immediately follows the summer field practice in surveying, course 306.

504 *General Agronomy*

Sophomore year, second term, recitation 2 hours, laboratory 3 hours. To be given in the first term beginning with the class of 1923.

Field crops, their soil adaptation, fertilizer requirements, seeding, harvesting, and crop rotations; grain judging, selection of seed, and methods of seed germination.

Prerequisite: course 502.

505 *Potato Culture and Varieties*

Junior or senior year, second term, lectures 2 hours, laboratory 3 hours.

Study of structure, morphology, seed preparation and planting, culture and harvesting.

To be preceded by course 504.

Courses 506 and 507 are open only to those students who can show the department a satisfactory knowledge of soils, poultry, live stock, dairy husbandry, truck, and fruit.

506 *Crops*

Senior year, first term, lectures 2 hours, laboratory 3 hours.

Fundamental principles of crop production and their application.

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507 *Farm Management*

Senior year, second term, lectures 2 hours, laboratory 3 hours; also junior year, second term, in the teacher-training course in agriculture.

Cost of production; capital and its distribution on the farm; most efficient size of business with reasons; farm organization; methods of renting and acquiring land; labor and methods of handling.

508 *Fertilizers and Manures*

Junior year, second term, recitation and lectures 2 hours; also junior year, first term, recitation 2 hours, laboratory 3 hours, in the teacher-training course in agriculture.

History and development of agricultural chemistry in its relation to present day problems in soil fertility. Sources, composition, value, and uses of fertilizers and manures, and theories of soil fertility.

509 *Soil Fertility* *Honor Course*

Senior year, first term, lectures 2 hours, laboratory 8 hours.

Advanced course on the origin, formation, and composition of soils. Relation of types to crop production. Modifications by cropping and fertilization. Laboratory course in analysis of soils, crops, and fertilizers.

510 *Soil Fertility* (continued) *Honor Course*

Senior year, second term, lectures 2 hours, laboratory 8 hours.

511 *General Bacteriology*

Junior or senior year, first term, recitation 2 hours, laboratory 3 hours.

Nature and products of bacteria; soil bacteria and their relation to soil fertility and crop production; micro-organisms in milk and other foods. Laboratory technique in the preparation of media, etc.

512 *General Bacteriology* (continued)

Junior or senior year, second term, recitation 2 hours, laboratory 3 hours.

513 *Soil Bacteriology*

Senior year, first term, lecture 1 hour.

An advanced course in soil bacteriology, dealing with the relation of important species of soil bacteria to the production and transformation of plant food in soils.

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514 *Soil Bacteriology* (continued)

Senior year, second term, lecture 1 hour.

515 *Soil Bacteriology*

Senior year, first term, recitation 2 hours, laboratory 3 hours.

Lectures, recitations, and reports on soil bacteria and other soil micro-organisms. Laboratory studies of soil bacteria and the chemical changes produced by them.

516 *Soil Bacteriology* (continued)

Senior year, second term, recitation 2 hours, laboratory 3 hours.

517 *Biology of Soil Micro-organisms*

Senior year, first term, lectures 2 hours, laboratory 3 hours.

Protozoa in their relation to soil bacteria; bacteria in their relation to soil fertility; algae and fungi in their relation to soil fertility. Development of technique and acquaintance with literature. Special problems.

518 *Biology of Soil Micro-organisms* (continued)

Senior year, second term, lectures 2 hours, laboratory 3 hours.

519 *Animal Husbandry I*

Junior year, second term, recitation 2 hours, laboratory 3 hours.

Market types of horses, beef cattle, sheep, and swine with special reference to feeding and management problems. Laboratory includes the judging of market classes of live stock and dairy cattle.

520 *Animal Husbandry II*

Senior year, first term, recitation 1 hour.

A course in live stock feeding, including dairy cattle. Animal nutrition and metabolism. A study of the digestibility, palatability, and economic value of various commercial feeding stuffs.

521 *Animal Husbandry III*

Senior year, first term, recitation 1 hour, laboratory 3 hours.

A study of the breed types of live stock. Laboratory includes the judging and identification of the breeds studied, also the tabulation of pedigrees.

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522 *Animal Husbandry IV*

Senior year, second term, recitation 1 hour.

Advanced work in feeds and feeding. Review of experimental data on the feeding of farm animals. Special assigned problems connected with economical feeding.

523 *Animal Husbandry V*

Senior year, second term, recitation 1 hour, laboratory 3 hours.

Animal breeding and live stock management. Common diseases of farm animals. Sanitation of equipment. Special laboratory work in live stock management. Construction of barn plans. Visitation of live stock farms.

524 *Dairy Husbandry I*

Sophomore year, second term, lectures 2 hours, laboratory 3 hours.

Elements of Dairying.—The secretion of milk, its composition and causes of variation in composition. A study of the Babcock test, separation and butter making, the sanitary handling of milk, and judging dairy cattle.

Prerequisites: general inorganic chemistry and either botany or zoology.

525 *Dairy Husbandry II*

Senior year, first term, lectures 2 hours, laboratory 3 hours.

Milk Production.—Selection, breeding, and development of dairy cattle; their care and management; feeding; problems connected with the economic production of milk. Advanced work in judging dairy cattle.

526 *Dairy Husbandry III*

Senior year, first term, lecture 1 hour, laboratory 5 hours.

Dairy Bacteriology.—Bacteria and their relation to various changes that take place in milk; application of bacteriology to the problems of both producer and consumer of milk and its products.

527 *Dairy Husbandry IV*

Senior year, second term, lectures 2 hours, laboratory 3 hours.

Market Milk.—Composition of milk and its food value; city milk supply and its relation to public health; milk transportation, milk ordinances, and milk inspection.

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528 *Dairy Husbandry V*

Senior year, second term, lecture 1 hour, laboratory 3 hours.

Dairy Manufactures.—A study of milk products. The manufacture of butter, several types of cheese, plain and fancy ice cream, fermented milk drinks. Mechanical refrigeration and creamery construction.

529 *Dairy Husbandry VI*

Senior year, second term, lecture 1 hour.

Special Production Problems.—The production of milk; breeding; feeding; animal nutrition and metabolism; diseases common to dairy cows. Intended to give an insight into present day investigational work.

530 *Poultry Husbandry I*

Sophomore year, second term, recitation 2 hours, laboratory 3 hours.

A general course showing the requirements and possibilities of the poultry industry. Poultry economics; plant and equipment; feeds; breeding; incubation and brooding; marketing of products; records and judging; diseases and enemies.

531 *Poultry Husbandry II*

Senior year, first term, recitation 3 hours, laboratory 8 hours.

Classification of types; commercial possibilities of the common breeds; problems in poultry house construction; feeds; the science of commercial poultry feeding.

532 *Poultry Husbandry III*

Senior year, second term, recitation 3 hours, laboratory 8 hours.

Preparation and marketing of poultry products. Hatching and rearing; modern methods of incubation and brooding. Poultry farm management.

533 *Poultry Pathology*

Senior year, first term, lectures 2 hours, laboratory 3 hours.

Problems and methods of sanitation in poultry keeping. Detailed study of the symptoms, cause, prevention, treatment, and control of poultry diseases.

534 *Poultry Pathology* (continued)

Senior year, second term, lectures 2 hours, laboratory 3 hours.

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535 *Plant Propagation and Pruning*

Junior year, first term, recitation 2 hours, laboratory 3 hours.

The principles and methods of plant propagation and the pruning of deciduous fruits, vines, and shrubs.

NOTE.—Beginning with the class of 1923, this will be offered as a 3-hour course (*i. e.* lectures 2 hours and laboratory 3 hours) in the second term of sophomore year.

536 *Practical Pomology I*

Junior year, second term, recitation 3 hours, laboratory 3 hours.

Principles of fruit growing as related to the culture of the common deciduous tree fruits. Field exercises in the planting and culture of orchards; preparation of spray mixtures; use of spraying machinery.

537 *Commercial Pomology*

Senior year, first term, recitation 2 hours, laboratory 3 hours.

A study of the picking, grading, packing, storing, and marketing of fruits, including a discussion of storage houses, commercial fruit packages, markets, methods of marketing, and cooperation.

538 *Systematic Pomology*

Senior year, first term, laboratory 5 hours.

A detailed study of the characters of some of the standard varieties of fruits. This lays the foundation for special work in fruit scoring and judging.

539 *Horticultural Literature*

Senior year, first term, 1 hour.

Sources of horticultural information; government and station publications; abstracts of bulletins and magazine articles.

540 *Practical Pomology II*

Senior year, second term, recitation 2 hours, laboratory 3 hours.

A study of the culture of the common small fruits. Grape culture with methods of pruning and training.

541 *Horticultural Seminar*

Senior year, second term, 2 hours.

Advanced study upon questions pertaining to practical, commercial and systematic pomology. Reports and discussions on special topics.

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542 *Plant Breeding*

Senior year, second term, recitation 1 hour, laboratory 2 hours.

A brief study of the elements of plant breeding with particular attention to horticultural crops.

543 *Olericulture or Market Gardening I*

Senior year, first term, recitation 3 hours, laboratory 8 hours.

Selection of varieties, crop management, harvesting, storage, and marketing. Vegetable forcing. Systematic vegetable description, classification, and nomenclature. Cold frame management. Detailed study of the culture of the various vegetable crops.

A special form of this course, called *Vegetable Gardening for Teachers*, and emphasizing methods of instruction, is given junior year, first term, recitation 2 hours, practical work 3 hours, to the separate group of students pursuing the teacher-training course in agriculture.

544 *Olericulture or Market Gardening II*

Senior year, second term, recitation 3 hours, laboratory 8 hours.

A continuation of preceding course. Hotbed construction and management; growing vegetable plants for transplanting; various cropping systems. Use of seed drills and cultivators; practice in vegetable growing in individual plots.

545 *Olericulture or Market Gardening III*

Senior year, first term, recitation 2 hours, laboratory 3 hours.

Detailed study of the culture of the various vegetable crops. Systematic study of varieties. Forcing vegetables in the greenhouse. Soil preparation; planting; harvesting; marketing. Practice in sowing and in transplanting.

546 *Olericulture or Market Gardening IV*

Senior year, second term, recitation 2 hours, laboratory 3 hours.

Practical exercises in construction and management of hotbeds and cold frames. Succession and companion cropping systems. Practice in vegetable growing in the field by assignment of individual plots.

547 *Farm Field Machinery*

Junior or senior year, first term, lecture 1 hour, laboratory 5 hours.

Basic principles of construction, proper care, adjustments, and operation of farm field machines. Practice in assembling and dissembling, with detailed study of complicated appliances. Farm gas engines are briefly discussed.

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548 *Farm Power*

Junior or senior year, second term, lecture 1 hour, laboratory 5 hours.

The internal combustion engine: construction, principles of operation, and everyday troubles with their remedies. Test of fuel consumption. Farm transmission problems; water power; electric lighting systems; tractors. Design of farm power plant required.

549 *Research Thesis*

Senior year, first term, laboratory 8 hours.

The study of some special agricultural problem. Students are given opportunity to acquire proficiency in advanced laboratory technique and to familiarize themselves with the literature on their particular problem.

550 *Research Thesis* (continued)

Senior year, second term, laboratory 8 hours.

Teacher Training Courses

551 *Teaching Vocational Dairying*

Sophomore year, first term, lectures 2 hours, laboratory 3 hours.

Includes study of secretion of milk, its composition and causes of variation in composition; the Babcock test; separation; butter making; and sanitary handling of milk.

552 *Teaching Vocational Dairying* (continued)

Sophomore year, second term, lectures 2 hours, laboratory 3 hours.

Dairy breeds; developing the dairy herd; care and management of dairy cattle; feeding for milk production, and economic production of market milk. Judging dairy cattle and practical work at dairy barns.

553 *Teaching Dairy Production*

Senior year, lectures 2 hours, laboratory 3 hours.

Dairy breeds; care and management of dairy cattle; feeding for milk production; composition of milk, its value as food; city milk supply and its relation to public health; milk transportation, milk ordinances, and milk inspection.

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554 *Soils, Fertilizers, and Farm Crops*

Freshman year, first term, lectures 2 hours, laboratory 3 hours.

Principles of crop growth and culture, soil requirements and adaptation, crop rotations and soil management, and maintenance of soil fertility.

555 *Soils, Fertilizers, and Farm Crops* (continued)

Freshman year, second term, lectures 2 hours, laboratory 3 hours.

556 *Farm Mechanics*

Junior or senior year, first term, lecture 1 hour, laboratory 5 hours.

A general course presenting essential principles of everyday farm construction and repair work, including carpentry, forging, concrete work, and pipe fitting. Each student is assigned a separate project.

557 *Farm Mechanics* (continued)

Junior or senior year, second term, lecture 1 hour, laboratory 5 hours.

Graduate Courses

558 *Farm Crops*

Open to those who are prepared to take advanced crop work. The course deals comprehensively with the so-called principles of crops. Attendance at seminars is required.

559 *Farm Management*

Cost accounting, farm organization, and farm surveys, with study of efficiency factors in relation to different methods of farming and types of farm. Attendance at seminars is required.

Prerequisites: courses in horticulture, crops, animal husbandry, and dairy husbandry, the equivalent of the undergraduate courses offered in this field.

560 *Microbiology of Soils*

Lectures, seminars, field and laboratory research. Isolation and study of bacteria, fungi, and protozoa prominent in cultivated soils.

561 *Soil Bacteriology*

Lectures, seminars, and laboratory research. Study of the morphology and physiology of the important groups of soil bacteria; their relation to soil fertility and crop production.

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562 *Soil Chemistry*

Lectures, seminars, and laboratory research. Study of methods of soil analysis, particularly of those for determining the inorganic constituents of the soil.

563 *Soil Fertility*

Lectures, seminars, laboratory research, field and pot experiments. The accumulation, transformation, and losses of plant-food in soils. Tillage, drainage, liming, fertilization, and manuring as factors in soil fertility.

564 *Advanced Animal Husbandry*

Special assigned problems in pork production and in the marketing of animal husbandry products.

565 *Advanced Dairy Husbandry*

A study of the methods used in investigational work in dairying, including a review of the research work in progress at other stations.

566 *Research Thesis in Dairy Husbandry*

The subject of the thesis is chosen by the student and approved by the professor under whose direction it is prepared.

567 *Advanced Poultry Husbandry*

Special research in poultry breeding, poultry feeding, incubation, and poultry management, these subjects being offered as major problems only.

568 *Pomology and Small Fruits*

Many problems in connection with peach and small fruit production are studied.

569 *Olericulture*

Various problems in growing vegetables, particularly the tomato, eggplant, pepper, and sweet potato.

570 *Plant Physiology*

Lectures on: retention of form; entrance of materials into the plant; movement of materials within; exit of materials; metabolism; growth under symmetrical and asymmetrical conditions. Seminars.

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PHYSIOLOGY

Professor MOORE

Majors may be taken with physiology either in chemistry or zoology.

571 *General Physiology*

Junior or senior year, first term, lectures 2 hours, recitation 1 hour, laboratory 4 hours.

Dynamics of the organism, physiology of muscle and nerve, the central nervous system, and special senses. Either Bayliss' *General Physiology* or Howell's *Textbook of Physiology* may be used.

Prerequisites: zoology 581, 582; or chemistry 421, 422; also a reading knowledge of French and German.

572 *General Physiology* (continued)

Junior or senior year, second term, lecture 1 hour, recitation 1 hour, journal club 1 hour, laboratory 4 hours.

Dynamics of the organism, continued; digestion; secretion; excretion; circulation; respiration; fertilization.

573 *Biochemistry*

Senior year, first term, lecture 1 hour, seminar 1 hour, laboratory 5 or 8 hours.

Quantitative methods in the study of the carbohydrates, fats, and proteins. (Haas and Hill's *Chemistry of Plant Products*)

Prerequisites: courses 571, 572; or chemistry 439, 440; also a reading knowledge of French and German.

574 *Biochemistry* (continued)

Senior year, second term, lecture 1 hour, seminar 1 hour, laboratory 5 hours.

Preparation of lipins, proteins, enzymes; analysis of blood and urine.

Graduate Course

575 *Research in General Physiology and Chemical Biology*

Investigation of problems in this field may be undertaken by those qualified. Hours of work and credit are to be arranged with the instructor.

Credit may be given for work carried out at the Marine Biological Laboratory, Woods Hole, Mass.

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ZOOLOGY

Assistant Professor DANFORTH, courses 582, 584, 585, 587, 591, 592, 594–596, 598

Assistant Professor NELSON, courses 581, 583, 586, 588–590, 593–595, 597

Major in zoology and physiology—Junior year. 571, 572, 584–586; senior year: 573, 574, 587, 588.

Minors may be chosen in physics, chemistry, botany, bacteriology, psychology, education, and geology.

Courses 581, 582 are prerequisites of all other courses in zoology except general ecology.

581 *General Zoology*

Sophomore, junior, or senior year, first term, recitation and lectures 2 or 3 hours, laboratory 3 or 5 hours.

An introductory course, covering elementary classification of animals with dissection of type forms, and designed to give a thorough grounding in invertebrate morphology.

582 *General Zoology* (continued)

Sophomore, junior, or senior year, second term, recitation and lectures 2 or 3 hours, laboratory 3 or 5 hours.

The elements of embryology, heredity, and evolution, with dissection of vertebrate types.

583 *Limnology*

Sophomore year, second term, lectures 2 hours, laboratory 3 hours.

A combination course given by the departments of botany, entomology, and zoology.

Primarily designed for students of sanitary science, this course includes both systematic and intensive study of the fauna and flora commonly living in water supplies. Methods of control of injurious forms are tested.

584 *Vertebrate Anatomy*

Junior or senior year, first term, lecture 1 hour, laboratory 5 hours.

Critical examination of various theories of the origin of vertebrates; comparative anatomy of fishes, amphibians, and reptiles; several lectures on vertebrate paleontology; occasional field trips. (Parker and Haswell, Wiedersheim, Kingsley)

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585 *Vertebrate Anatomy* (continued)

Junior or senior year, second term, lecture 1 hour, laboratory 5 hours.

The warm-blooded animals are thoroughly studied by laboratory dissection and by field trips, special attention being given to the zoological history of the human body.

586 *Animal Parasites*

Junior or senior year, first term, lecture 1 hour, laboratory 3 hours.

A study of the parasitic Protozoa, round worms, flat worms, and arthropods, and their relation to human disease.

587 *Histology*

Junior or senior year, first term, recitation or lecture 1 or 2 hours, laboratory 5 or 8 hours.

Microscopic anatomy of the vertebrate body, with methods of histological technique. (Schäfer, Lewis, Bailey; reference books on technique—Guyer, Hardesty, Lee)

Prerequisites: courses 571, 572 .

588 *Embryology*

Junior or senior year, second term, recitation or lectures 1 or 2 hours, laboratory 5 hours.

Comparative vertebrate embryology, including the development of the frog, chick, and pig. Special methods are introduced. (Prentiss, Kellicott, Lillie, Keibel-Mall)

589 *Animal Breeding*

Junior or senior year, first term, lectures 2 hours, laboratory 3 hours.

Genetics and experimental embryology including a careful study of the literature on heredity, with laboratory experiments on insects birds, and mammals. (Walter's *Genetics*)

590 *Animal Breeding* (continued)

Junior or senior year, second term, lectures 2 hours, laboratory 3 hours.

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591 *General Ecology*

Sophomore, junior, or senior year, first term, lectures 2 hours, field exercises or laboratory 3 hours.

Primarily an outdoor course. Animals and plants are studied in their natural environment and in relation to their geologic past. Special training is given in observation in the field.

592 *General Ecology* (continued)

Sophomore, junior, or senior year, second term, lecture 1 hour, laboratory 5 hours.

The relations of animals to one another, to their plant environment, and to man; bird migration; domestic economy of the higher vertebrates.

593 *Economic Molluscs*

Junior or senior year, second term, lecture 1 hour, laboratory 5 hours.

Detailed study of freshwater mussels, oyster, clam, and other molluscs of economic importance. The course includes 100 hours of field work in summer on the New Jersey coast in the identification of larval forms.

[Given 1920–1921 and alternate years]

594 *Thesis*

Senior year, first term, laboratory 5 hours.

A thesis subject may be taken in physiology or zoology with the approval of the instructor in charge.

595 *Thesis* (continued)

Senior year, second term, laboratory 5 hours.

Graduate Courses

596 *Research in Histology*

Lectures, conferences, and laboratory work.

Investigation of special problems in normal and pathological histology.

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597 *Research in Embryology*

Lectures, conferences, and laboratory work.

Normal and experimental embryology.

Credit in this course is given for work done at the Woods Hole Marine Biological Laboratory.

598 *Research in Ecology*

Lectures, conferences, and field work.

Investigation of special problems in animal ecology.

BOTANY AND PLANT PATHOLOGY

Professor COOK, courses 603–605, 611–614

Associate Professor J. P. HELYAR, courses 601, 602

Assistant Professor MARTIN, courses 603–614

Major—Junior year: 605–608; senior year: 609, 610, with two courses in chemistry—or junior year: 605, 606, with two courses in chemistry; senior year: 607–610.

Minors may be chosen in chemistry, zoology, physiology, and education.

Courses 601, 602, or 603, 604, are prerequisites of all other courses in botany.

601 *Agricultural Botany*

Freshman year, first term, lectures 2 hours, laboratory 3 hours in the course in agriculture.

An introductory course in college botany dealing with the structure, development, and functions of plants. Emphasis is placed on the botanical features of crop plants. (Cook's *Practical Botany*)

602 *Agricultural Botany* (continued)

Freshman year, second term, lectures 2 hours, laboratory 3 hours in the course in agriculture.

603 *Introductory Botany*

Sophomore, junior, or senior year, first term, recitation 2 hours, laboratory 3 hours.

An introductory course in college botany. Morphology and physiology of the higher plants. (Cook's *Practical Botany*)

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604 *Introductory Botany* (continued)

Sophomore, junior, or senior year, second term, recitation 2 hours, laboratory 3 hours.

Economic and cryptogamic botany. The place of plants and plant industries in modern life, and a study of the types of cryptogams. (Cook's *Practical Botany*)

605 *Plant Pathology*

Junior or senior year, first term, recitation 1 hour, laboratory 3 or 5 hours.

Causal factors and symptoms of plant diseases. Principles of disease control and preparation of fungicides.

606 *Microtechnic*

Junior or senior year, second term, recitation 1 hour, laboratory 5 hours.

Methods of preserving and preparing plant material for study. Fixing, embedding, cutting, and staining. (Chamberlain's *Methods in Plant Histology*)

607 *General Morphology*

Junior or senior year, first term, recitation 1 hour, laboratory 5 hours.

Comparative anatomy and development of non-vascular cryptogams and a study of their relationships.

Prerequisites: courses 601, 602, or 603, 604, or equivalent.

608 *General Morphology* (continued)

Junior or senior year, second term, recitation 1 hour, laboratory 5 hours.

Comparative anatomy, embryology, and phylogeny of pteridophytes and spermatophytes.

609 *Mycology: Plant Pathology*

Graduate and senior elective, first term, lectures 1 to 3 hours, laboratory 3 or 8 hours, for advanced students.

Morphology, classification, and life history of the Basidiomycetes and Phycomycetes. Collection and preservation of various types.

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610 *Mycology: Plant Pathology* (continued)

Graduate and senior elective, second term, lectures 1 to 3 hours, laboratory 3 or 8 hours.

Ascomycetes and Fungi Imperfecti.

Graduate Courses

Graduate students in this department are expected to do certain assigned reading and to meet at least one hour a week for the review of current literature on botanical subjects.

611 *Advanced Plant Pathology*

Lectures and laboratory work. Studies on the life history and morphology of organisms causing disease; the symptoms and treatments of diseases.

612 *Advanced Plant Pathology*

Lectures and laboratory work. A course in microtechnique of fungi and diseased plant tissues.

613 *Advanced Plant Pathology*

Laboratory research. Work on an assigned problem.

614 *Advanced Plant Pathology*

Seminar 1 hour a week.

ENTOMOLOGY

Professor HEADLEE, courses 621, 622, 624, 626, 629

Assistant Professor PETERSON, courses 623, 625, 627, 628, 630

The student intending to specialize in entomology should plan to take courses 621–623.

621 *General Entomology*

Junior or senior year, first or second term, recitation 2 hours, laboratory 3 hours.

The general anatomy and physiology of insects with special reference to their relations to other animals and plants and to the ways in which insect life affects human welfare.

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622 *Economic Entomology*

Senior year, first or second term, recitation 3 or 4 hours, laboratory 8 or 10 hours.

The bearing of the insect world on human welfare. Recognition marks, life history and habits, and methods of controlling the most important of both the injurious and the beneficial species of insects.

623 *Taxonomic Entomology*

Senior year, first or second term, recitation 3 or 4 hours, laboratory 8 hours.

Lectures and student reports on the characteristics of the main groups and subgroups of insects, methods and ends of classification, and taxonomic literature.

624 *Economic Entomology*

Junior or senior year, first or second term, recitation 2 hours, laboratory 3 hours.

An abbreviated form of 622.

Prerequisite: course 621.

625 *Taxonomic Entomology*

Junior or senior year, first or second term, recitation 2 hours, laboratory 3 hours.

An abbreviated form of 623.

Prerequisite: course 621.

626 *Medical Entomology*

Junior or senior year, first or second term, recitation 2 hours, laboratory 3 hours.

The student is expected to become familiar with the principal insects that carry disease, the methods employed by them in this work, and the ways in which their work may be prevented.

627 *Morphology and Development of Insects*

Senior year, second term, recitation 3 hours, laboratory 10 hours.

General principles of insect structure and development.

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Graduate Courses

628 *Taxonomic Entomology*

Intended for students with sufficient preparation and experience to undertake a more or less independent study of the fundamental principles of insect classification.

629 *Economic Entomology*

Designed for students with sufficient preparation and experience to pursue a more or less independent study of some phase of the relationship which insects bear to man.

630 *Morphology and Development of Insects*

The student is expected to become familiar with the general principles of insect structure and development and to pursue a detailed study of some specific phase of structure or development.

HYGIENE AND SANITARY SCIENCE

Professor DEVAN, courses 641–643

Dr. LEONARD, course 644

641 *Hygiene*

Freshman year, first term, 1 hour; required in all courses.

642 *Hygiene* (continued)

Freshman year, second term, 1 hour; required in the liberal courses and in the technical courses in agriculture and biology.

643 *Pathogenic Bacteriology*

Junior year, second term, lectures 2 hours, laboratory 3 hours.

644 *Public Health Law and Epidemiology*

Senior year, first term, lectures 2 hours.

Other courses in sanitary science are tabulated on page 72.

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MILITARY SCIENCE AND TACTICS

Lieutenant-Colonel GREACEN

Sergeants WHITE, SIEBERT, and KRASOWSKI

The purpose of the instruction in this department is not only to give military training that shall fit young men to render efficient and intelligent service to their country in time of war but also to spread among the citizens of the state a thorough and accurate knowledge of our military history, policy, and necessities.

The endeavor is to inculcate habits of discipline, obedience, loyalty, self-control, order, and precision.

Military training improves the health and physique through the habit of erect carriage, alert movement, and a certain amount of incidental physical exercise. The student learns also what should be done in case of injury, how to prevent disease and otherwise preserve his health in camp and wherever else sanitary precautions are necessary.

The military instruction meets the requirements of the laws of Congress for the state colleges organized under the act of July 2, 1862, and also of the National Defense Act of June 3, 1916.

The Corps of Cadets is organized as a battalion of infantry forming a unit of the "Reserve Officers' Training Corps." A student band accompanies the battalion and takes part in its exercises on suitable occasions.

The War Department details an officer of the Regular Army as Professor of Military Science and Tactics.

The course in Military Science and Tactics qualifies the student who completes it: (1) for appointment in the "Officers' Reserve Corps;" (2) for appointment, in time of peace, as temporary second lieutenant in the Regular Army for further training; (3) for further appointment to permanent commissions in the Regular Army.

The course is required of all freshmen and sophomores, except those excused on certificates of physical disability or by reason of conscientious scruples. It is elective in the junior and senior years.

To be eligible for the Reserve Officers' Training Corps a student must be a citizen of the United States and not less than fourteen years of age. The following are ineligible: officers of the Army, officers of the Reserve Corps, members of the Navy not completely discharged, members of the States forces, and aliens.

Students who do not meet these conditions of eligibility, but are physically able and not excused on account of conscientious scruples, are attached to the Corps without being enrolled as members. They

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are required to attend all its exercises, theoretical and practical, providing uniforms at their own expense.

The United States partly furnishes service uniforms to members of the Reserve Officers' Training Corps and transportation and subsistence to those members who elect to attend summer training camps. (Paragraphs 45 to 66, General Order No. 49, Series 1916, War Department.)

All students excused from military training for whatever reason are required to devote an equivalent amount of time to exercise in the gymnasium.

The instruction is both theoretical and practical, the former being designated as military science and the latter as military tactics. A progressive program of training is carried out, as follows:

Theoretical

Theory of target practice; military organization; map reading; service of security; personal hygiene; general military policy of the United States as shown by military history; military obligation of citizenship; service of information; combat, illustrated by small tactical exercises; infantry drill regulations; camp sanitation; small arms firing regulations; marches and camps; army regulations; minor tactics; map maneuvers; company administration; military history; elements of international law; property accountability; court-martial proceedings; international relations of America; psychology of war; general principles of strategy.

Practical

Physical drill; infantry drill, to include the school of the battalion; preliminary instruction in target practice; gallery practice; nomenclature and care of equipment; instruction in first aid; signaling; elements of fortification; military sketching.

651–654 *Military Science and Tactics*

Freshman and sophomore years, 3 hours equated as 1, required in all courses.

May include functioning as cadet non-commissioned officer.

655–658 *Military Science and Tactics*

Junior and senior years, 5 hours equated as 3, elective in all courses.

Includes functioning as cadet officer.

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PHYSICAL TRAINING

Mr. REILLY

Opportunities for physical training are afforded to all students by the Robert F. Ballantine Gymnasium and Neilson Field.

At the beginning of the freshman year each student is given a physical examination and a complete record is made of his physical condition. This examination is repeated from time to time and the record thus furnishes valuable information concerning the growth and development of the individual.

Swimming is required during both terms. Freshmen who fail to attain satisfactory proficiency before May first lose their class standing.

Regular physical training is required of all freshmen and sophomores who are for any reason excused from military drill. Those excused for physical defects are given corrective exercises.

Freshmen and sophomores are required, in addition, to take one hour twice a week of directed outdoor exercise. Members of any squad connected with the various branches of athletics, however, may omit these scheduled hours by registering personally with the Physical Director. In this way, all underclassmen, especially those not belonging to organized athletic squads, are provided with an opportunity for healthful outdoor exercise.

Those not members of the college teams are provided with facilities for track work, football, baseball, basketball, soccer, tennis, swimming, and gymnasium work.

Classes are formed during the winter in light and heavy gymnastics, boxing, wrestling, and fencing, and a progressive system of instruction is followed.

Health Supervision

The health of students is under the care of the College Physician. Daily office hours are held for consultation and every student may obtain advice upon all matters pertaining to his health.

Early in the fall a complete medical examination is made of all entering students by the College Physician. Subsequent examinations are given at suitable intervals.

All candidates for athletic teams are required to pass an examination declaring them physically fit for competition.

681 *Graduation Thesis*

During the senior year each member of the graduating class is required to prepare a thesis on some subject approved by the pro-

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fessor or professors in charge of his elective course or courses. The thesis must be acceptable to the professor under whose direction it has been prepared and the author is required to submit two typewritten copies on the prescribed paper and suitable in all respects for binding and for permanent preservation in the College Library and in the department files.

The subject must be submitted to the college office on or before the first day of the second term and the completed thesis not later than the last Friday in May.

Every senior whose work in preparation of the graduation thesis is not provided for in the regular schedule, is required: (1) to submit to the college office, not later than four weeks after the beginning of the second term, a written report of work done toward the preparation of his thesis; and (2) to report to the professor concerned for weekly conference thereafter at such time as the professor may appoint, until the thesis has been completed and accepted.

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SHORT COURSES IN AGRICULTURE

Officers of Administration

W. H. S. DEMAREST, LL.D., *President of the College*

JACOB G. LIPMAN, Ph.D., *Dean of Agriculture*

FRANK G. HELYAR, B.S., *Director of the Short Courses in Agriculture*

Teaching Staff

JACOB G. LIPMAN, Ph.D., Soil Fertility and Fertilizers
MELVILLE T. COOK, Ph.D., Plant Pathology
THOMAS J. HEADLEE, Ph.D., Entomology
HARRY R. LEWIS, M.Agr., Poultry Husbandry
WILLIAM M. REGAN, A.M., Dairy Husbandry
FRANK G. HELYAR, B.S., Animal Husbandry
FRANK APP, Ph.D., Farm Management
JOHN P. HELYAR, M.S., Seed Testing
ARTHUR J. FARLEY, B.S., Horticulture
LYMAN G. SCHERMERHORN, B.S., Vegetable Gardening
WILLARD C. THOMPSON, B.S., Poultry Husbandry
GEORGE W. MUSGRAVE, M.S.A., Agronomy
ALVAH PETERSON, Ph.D., Economic Entomology
MERLE S. KLINCK, B.S. in Agr., Rural Engineering
ROBERT W. ARMSTRONG, M.S., Horticulture
FORREST C. BUTTON, B.S., Dairying
JOHN HILL, B.S., Dairy Husbandry
HENRY B. SEAVER, B.S., Horticulture
WILLIAM C. SKELLEY, B.S., Animal Husbandry
RALSTON R. HANNAS, M.S., Poultry Husbandry
GEORGE H. POUND, B.S., Poultry Husbandry
Miss CLARA M. CHANDLER, *Secretary*

Short Courses in Agriculture

As outlined on pages 86 and 87, four courses of study are offered embodying subject matter as follows:

Course I General Agriculture and Dairy Farming
Course II Fruit Growing and Market Gardening
Course III Poultry Husbandry
Course IV Bee Husbandry

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The courses are offered for men and women interested in agriculture who are willing to invest their best efforts and work diligently for the cause of better agriculture and the improvement of farm life. Tuition is free to residents of the State; non-residents are also received upon payment of a fee of twenty-five dollars ($25.00); all pay a registration fee of five dollars ($5.00) upon acceptance of their application for admission.

Entrance examinations are not required for admission, but candidates should be at least seventeen years of age and show credentials evidencing a common school education. Graduates of high schools who have had at least two years' practical work on the farm are well qualified for the work. Farm boys and girls with more experience and perhaps less actual schooling are able to pursue the work with great credit to themselves.

All four of these courses are open to men and women alike, and each requires the full twelve weeks' work. Satisfactory completion of any one of the courses entitles the student to a certificate awarded by the College.

The courses open on November 15, 1920, and close February 18, 1921. Correspondence concerning them should be addressed to Professor Frank G. Helyar, Director of the Short Courses in Agriculture, New Brunswick, New Jersey.

LABORATORY EQUIPMENT AND PRACTICES

The practical work scheduled as laboratory practices is planned for all the courses in such a way that the student is enabled to make the best use of his time. The demonstrations are supplemented by the use of lantern slides and models, while the equipment assembled in the various departments of the Experiment Station is available for student use. The dairy laboratory is equipped with modern machinery essential for the care and handling of milk and butter. For the live stock judging work there are available specimens of horses, dairy cattle, sheep, and swine, and the students are given actual work in the scoring of animals and the placing of classes. A shop and a machine shed equipped with tools provide adequate facilities for the study of farm machinery. The equipment available for the fruit growing and market gardening practice work includes greenhouses especially designed for class work, where practical exercises are given in plant propagation and greenhouse management. The station orchards furnish excellent

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specimens for judging work, while the nursery and the orchard are used extensively for spraying and pruning exercises. The crop laboratory is provided with many different varieties of grains adapted to New Jersey, so that the student can study and familiarize himself with these cereals. Material is also provided for the judging and grading of grain, so that the student can select his seed with the best of care. The laboratory is further furnished with grasses and legumes representing those best adapted for forage crops in the State. Flock practice and the care of incubators and brooders constitute work required daily in the poultry department. Each student is given a flock of birds and is charged with the care of an incubator and the rearing of the chicks until they are six weeks of age. Eighteen lecture hours and twenty laboratory hours are required in each course.

The aim of the Short Courses in Agriculture is to train young men and young women in the science of agriculture. That the courses are useful and practical is evidenced by the increased enrolment from year to year and by the subsequent achievements of young men and women completing the courses.

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DIPLOMAS AND CERTIFICATES

THE BACHELOR'S DEGREE

THE DEGREE of Bachelor of Arts (A.B.), Bachelor of Letters (Litt.B.), or Bachelor of Science (B.Sc.) is conferred by the Trustees upon students in full standing who satisfactorily complete the corresponding four-year course as described on pages 48 to 83, and the appropriate diploma is granted.

In the case of Bachelor of Science graduates who have pursued the technical science courses, the words "in Agriculture," "in Biology," "in Ceramics," "in Chemistry," "in Civil Engineering," "in Electrical Engineering," "in Mechanical Engineering," are officially recorded to correspond with the course taken.

The degree of Bachelor of Divinity (B.D.) is conferred by the Trustees on students graduating from the Theological Seminary in New Brunswick who present certificates from the Faculty of the Seminary showing that they have done the special work and successfully passed the special examinations prescribed for the degree.

HIGHER DEGREES

The graduate student is referred to page 42 for information concerning matriculation and courses of study.

The Master's Degree

To students graduated since 1912 the master's degree will be granted on the following conditions:

1 This degree is to be given after extended liberal study and not, as in the case of the doctor's degree, after intense application to one subject and to original research.

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2 The studies pursued by the candidate for this degree shall constitute a course by themselves, as they would if he were studying law or divinity.

3 The course must consist of three subjects to be pursued by the student for two years, ordinarily in residence at Rutgers; equivalent graduate courses pursued at another institution may, however, be substituted for the first year's requirements.

4 The character of such studies shall not differ essentially from that of the elective courses now widely offered to seniors in our colleges; in other words their character shall be elementary and liberal.

Earlier graduates who so desire may apply for the degree on the basis of the former requirements, which may be found in earlier editions of the catalog or will be furnished upon application to the Registrar.

The Faculty will also recommend for the master's degree regularly enrolled graduate students who shall, in residence, have satisfactorily completed the work of one year in the research and investigation required for the degree of Doctor of Philosophy.

Candidates are required to submit their theses at least one month before the granting of the degree.

The nature of the degree to be conferred, whether Master of Arts or Master of Science, will be determined by the kind of studies pursued and work done in the graduate rather than in the undergraduate years.

The Doctor's Degree

The Trustees have not yet established a separate school for graduates, but several of the departments of the College are provided with facilities and with a teaching force adequate to the demands of a limited number of grad-

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uates who may desire to pursue courses of study and research leading to the degree of Doctor of Philosophy (Ph.D.).

For enrolment as a candidate for this degree it is required that the applicant present a diploma of graduation from Rutgers College or from a college whose diploma shall have been accepted by the Faculty of Rutgers as entitling the applicant to such enrolment. The candidate must further satisfy the professors in charge of his graduate work that he has a reading knowledge of French and German sufficient to enable him to carry on advanced or research work successfully. Enrolment is granted by a vote of the Faculty only when the application is accompanied by a statement from the head of the department in which the applicant proposes to do his principal work, certifying the readiness of the department to receive him as a candidate for the degree of doctor.

Students thus accepted as candidates will be recommended for the doctor's degree on the fulfilment of the following requirements:

1 While no determinate period will in any case be assigned for the attainment of the doctor's degree, all candidates are required to spend at least three years in the pursuit of an accepted course of study. This work is to be done in residence at Rutgers, but equivalent graduate courses begun at other institutions may be substituted for all but the work of the final year.

2 A certificate, signed by the professors in charge of the candidate's graduate work, stating that the preliminary requirements in French and German have been fully met, must be filed at least one year previous to the final examination for the doctor's degree.

3 The accepted course shall include a principal subject and either one or two secondary subjects. The principal

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subject must be of such a character as to engage the creative and constructive powers of the candidate.

4 The secondary subject or subjects must be chosen in a department other than that of the principal subject, but the head of the department in which the candidate takes his principal subject will advise in regard to the choice of the secondary work, which must have such relation to the principal subject as shall more or less immediately contribute to the value of the principal work.

5 An examination which shall satisfy those having direction of the candidate's studies and the Faculty that the candidate is fitted to receive the doctor's degree.

6 A thesis upon some question connected with the principal subject, which shall be the result of the candidate's original investigation and an actual contribution to knowledge. This thesis must be submitted to the head of the department in which the principal subject has been pursued at least four months before the final examination.

Engineering Degrees

The degrees of Civil Engineer (C.E.), Electrical Engineer (E.E.), Mechanical Engineer (M.E.), and Ceramic Engineer (Cr.E.) are professional degrees and are on application conferred upon candidates who, after graduation from an appropriate course in this College, have passed three years in the practice and study of their profession, provided each such candidate shall present to the Faculty, together with a statement of the work upon which he has been engaged during this period, a satisfactory thesis or discussion of some engineering work which he has done.

CERTIFICATES

To students who have satisfactorily pursued the short course in Clay-working, a short course in Agriculture, or

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other special courses of study, a certificate is granted stating the studies pursued and the attainments made.

Certificates are also given for courses completed in the summer session, and these are accepted by the State Board of Examiners in all subjects required for any kind of state teacher's certificate.

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HONORS

GRADUATION HONORS

General Honors

GENERAL HONORS are awarded at graduation on the basis of scholarship, three classes of honor students being recognized:

1 Highest honors are awarded to students who have attained an average grade of "A" (see page 223), and no single grade lower than "B."

2 High honors are awarded to students who have received an average of "B" or above and no single grade lower than "C."

3 Honors are awarded to students who have received an average of "B" or above for the entire course.

Special Honors

Special honors at graduation may be awarded in any elective pursued during the junior and senior years to students in the Bachelor of Arts, the Bachelor of Letters, or the general Bachelor of Science course. To be eligible to receive such an honor a student must satisfy the following conditions:

1 He must rank highest of those pursuing the same elective.

2 He must have maintained an average grade of "B" (see page 223) in the elective subject during the junior and senior years, and also in all the other studies of his course.

3 He must be recommended to receive the honor by the professor or professors who have instructed him in the elective.

Special honors at graduation may also be awarded to students pursuing the technical Bachelor of Science courses. To be eligible to receive such a technical science honor a student must satisfy the following conditions:

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1 He must have maintained an average grade of "B" (see page 223) in the technical elective subjects of the junior and senior years, and also in all the studies of the course.

2 He must be recommended to receive the honor by the professor or professors who have instructed him in the technical science subjects of his course.

Commencement Speakers

Members of the graduating class, not exceeding three in number, are appointed to speak at commencement. These are chosen by grade in speaking and composition during the entire course from the students who have been awarded general scholarship honors.

Phi Beta Kappa

Those students that have won general scholarship honors may be recommended for election to the Phi Beta Kappa Society to the number of one-seventh of the graduating class. In case the honor men exceed this number those of highest rank are selected.

Military Distinction

The orders of the War Department provide that on the graduation of every class the names of such students as have shown special aptitude for military service shall be reported to the Adjutant General of the United States Army and to the Adjutant Generals of their respective states.

One of these is designated by the Professor of Military Science as the "Best Soldier" and his name is engraved on a bronze tablet provided for that purpose in the Ballantine Gymnasium.

JUNIOR ORATORICAL HONORS

Eight members of the junior class in the regular courses are chosen each year on account of their ability in composi-

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tion and in public speaking to deliver original speeches on the evening preceding commencement. The selection is made by a committee of three persons appointed for that purpose by the Faculty. To the best writers and speakers among the junior orators are awarded the Irving S. Upson Prizes in Oratory.

SOPHOMORE ORATORICAL HONORS

Members of the sophomore class in full standing who have pursued a regular course from the beginning of the freshman year and who are recommended by the Professor of the Art of Public Speaking may contest for oratorical honors. Eight may be chosen in the order of merit, of whom the first two receive the Myron W. Smith Memorial Prizes in Oratory.

CLASS HONORS AND HONOR STUDENTS

The list of honor men of the three lower classes is published in the Register of the *College Catalog*.

Class honors are determined as follows:—

1 Freshman honors are awarded to those members of the freshman class who maintain an average grade for the year of B or above.

2 Sophomore honors are awarded to those members of the sophomore class who maintain an average grade for the year of B or above, provided that not more than three term hours in their schedules are graded below C.

3 Junior honors are awarded to those members of the junior class who maintain an average grade for the year of B or above, provided that no one of their courses is graded lower than C.

4 Students who make both freshman and sophomore honors constitute the "honor group" in the junior year.

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In case any member of this group fails to win junior honors, he forfeits for his senior year the privileges of the honor student.

5 A student who has failed to win freshman honors, but who wins both sophomore and junior honors, is placed in the honor group and granted the privileges of the honor men for his senior year.

HONORABLE MENTION

For the encouragement of additional or independent reading or study and original investigation under the direction of the Faculty honorable mention is made of students who give evidence of thoroughness in such work and pass a satisfactory examination. This work is done outside the course and without reference to a prize.

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FELLOWSHIPS

APPLICATIONS for the first two fellowships should be filed with the Registrar not later than the first of May. The written consent of parent or guardian is necessary in case the applicant is under twenty-one years of age. Applications from graduates should give an account of work done since graduation and should be accompanied by appropriate testimonials. No testimonials or endorsements are required for students still in college.

Assignment of the various agricultural research fellowships is made on the recommendation of the Dean of Agriculture.

Every student holding a fellowship is expected to give some assistance in undergraduate instruction or laboratory practice.

BLODGETT FELLOWSHIP IN SCIENCE

James H. Blodgett, of Washington, D. C., has given a fund for the encouragement of advanced study in the Scientific School. Whenever the accumulated income from this investment amounts to $200 that sum is paid in quarterly instalments to a graduate of Rutgers holding the degree of Bachelor of Science, who is selected by a committee appointed by the Faculty and who is designated as Blodgett Fellow in Science. Besides pursuing graduate studies in the Scientific School for one year the holder of this fellowship is required to render assistance to the professor having the direction of such studies and for that service is exempt from the payment of all fees.

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VANDER POEL FELLOWSHIP IN CHEMISTRY

This fellowship was established by a bequest of the late John A. Vander Poel of the class of 1889. The income is awarded annually by the Faculty to graduate or undergraduate students of the College. "So far as may be convenient the student to receive such scholarship income shall be one pursuing a course of study in chemistry or other science."

AGRICULTURAL RESEARCH FELLOWSHIPS

Ammonium Sulphate Research Fellowship.—The value of ammonium sulphate as a source of nitrogen to vegetation is to be studied under a grant made by the Barrett Company, of New York City. The grant is for a period of three years and provides an income of $600 per annum. The appointee to this fellowship is to conduct investigations on the availability of nitrogenous plant-foods with special reference to the availability of nitrogen in ammonium sulphate. A study is also to be made of the function of the sulphur in ammonium sulphate. Field and pot experiments are to be conducted in order to determine the changes which this substance undergoes in the soil and the chemical and biological changes produced by its application.

Aldunate-Bascuñan Chilean Nitrate Research Fellowship.—The increasing interest in the subject of the availability of nitrogen recently led the Chilean Nitrate Committee to appropriate the sum of $2,000 for the establishment of a three-year research fellowship at Rutgers College. A like sum was again appropriated in 1917. The sum thus provided is to be utilized for investigations of the factors which influence the transformation and utilization of nitrate nitrogen in the soil. Chemical and bacteriological methods are to be employed by the fellow in the study of the important reactions that occur in land which has received applica-

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tions of sodium nitrate. Also study is to be made of the factors that are responsible for the differences in the recovery of nitrate nitrogen by different crops and under varying seasonal and soil conditions.

Zinc Oxide Research Fellowship.—This was established for a period of three years by the New Jersey Zinc Company, and provides for the study of fungi responsible for the deterioration of paints on the interior walls of greenhouses and other buildings.

International Salt Company Fellowship.—This fellowship was established by the International Salt Company, of Scranton, Penn., for the purpose of providing funds to be applied in the study of the possible value of common salt in making available potash and other mineral plant-food in the soil. The fellowship provides an income of $600 per annum.

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SCHOLARSHIPS AND BENEFICIARY AID

GENERAL SCHOLARSHIPS

CERTAIN scholarships established by college endowment funds may be assigned to young men of approved character and ability whose financial circumstances are such as to make assistance necessary.

North Jersey Agricultural Society Scholarship.—This scholarship provides an income of $150 per annum and is open to undergraduates in the agricultural course. It is awarded by the North Jersey Agricultural Society on the recommendation of the President of the College and the Dean of Agriculture.

STATE SCHOLARSHIPS

Scholarships available to residents of New Jersey fall into two classes: (1) those established by the state law of 1864, and (2) those provided by the law of 1890, as amended in 1905 and in 1917. These are described in the following paragraphs and further information may be obtained upon application to the President or the Registrar.

Act of 1864

Under this law a certain number of students from the State of New Jersey are received into the Scientific School and educated free of expense for tuition. These students are admitted to such scholarships on the recommendation of the superintendent of schools in each county after passing the required examinations (see page 44). The whole number of scholarships provided by the Act of 1864 is 40, distributed among the counties in proportion to their population.

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Act of 1890

By a law passed March 31, 1890, and amended by an act of March 31, 1905, and further amended by an act of March 20, 1917, a number of scholarships for each year, equal to the number of assemblymen, are offered to students in all parts of the state.

The candidates for these scholarships are selected by a competitive examination held under the direction of the city and county superintendents of education in each county of the state on the first Thursday in June and the Friday and Saturday following of each year. The whole number of such scholarships to be awarded each year is 60, and any candidate who passes the examination is entitled to an appointment, provided there is a vacancy in any district.

These scholarships cover all the college fees, including the charges for tuition, public room service, and special fees.

BENEFICIARY FUNDS

The Trustees of the College hold in trust certain funds, the income of which is available for the assistance of students who are preparing for the ministry of the Reformed Church in America. Every student thus aided receives $180 annually and must engage to pursue his studies uninterruptedly until he shall have completed the course in one of the theological schools under the care of the General Synod of this Church. The beneficiary trusts thus held by the College are: the Brownlee Memorial Fund, $3,000; the Hedges Scholarship Fund, $6,000; the Hopper Fund, $3,000; the Knox Fund, $3,000; the Mandeville Fund, $7,000; the Smock Fund, $1,000; the Van Bunschooten Fund, $20,000; the Van Lieuw Fund, $1,000; the Voorhees Fund, $36,000; the Vreeland Legacy Fund, $2,500.

The Board of Education of the Reformed Church also grants aid to young men preparing for the ministry in the

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denomination. Information may be had by addressing the Secretary of the Board of Education, 25 East Twenty-second Street, New York, N. Y.

THE RHODES SCHOLARSHIPS

Under the Foundation established by the will of the late Rt. Hon. Cecil John Rhodes, of South Africa, two scholarships at the University of Oxford are constantly available for students representing the State of New Jersey. Candidates must have finished two years of work at an American college, and must either reside in the State of New Jersey or have received there the major part of their education. Candidates are no longer required to pass a qualifying examination. The award is made by the New Jersey Committee of Selection, and has regard to literary, athletic, social, and moral attainments, as well as to those of scholarship. The election of scholars, postponed on account of the war, was resumed in October, 1919, and the successful candidate will go into residence at Oxford either in January or October, 1920. The scholarships have an annual value of £300, and are tenable for three years. Particulars may be obtained from Professor Frank Aydelotte, Institute of Technology, Cambridge, Mass.

Rhodes scholars from Rutgers, with their terms of residence at Oxford:

FRANCIS MARMADUKE POTTER '09
1908–1911, B.A. (Oxford, 1911)

SAMUEL ARTHUR DEVAN '09
1910–1913, B.A. (Oxford, 1913)

VALENTINE BRITTON HAVENS '12
1913–1916, B.A. in Jurisprudence (Oxford, 1916)

ROY MUNDY DAVIDSON RICHARDSON '15
1916–

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PRIZES

IN EVERY CASE where it is expected that a prize will be awarded for work done it is distinctly announced that unless in the opinion of the examiners the work submitted is of such excellence as to merit a prize none will be awarded.

Whenever a prize requires both an essay and an examination the essay must be handed in before the hours fixed for the examination.

All prizes are open equally to students in all courses leading to a degree except in cases where they are specially limited by the donor. Each competitor for a prize must sign a written declaration that the essay or other work offered by him is his original and unaided work. The essays are to be written on paper of a prescribed kind and the successful essay is to be deposited in the College Library before the writer is entitled to the prize.

The announcement of prize subjects, published for each college year, may be obtained from the Registrar.

SENIOR PRIZES

James Suydam Prize in English Composition.—A gold medal of the value of $25, or that sum in money, the gift of James Suydam, is awarded annually to that member of the senior class who attains the highest standing in composition, the basis of award being an average made up of the combined grades of the regular essays of the four years' course, and of a special essay on an assigned subject.

James Suydam Prize in Natural Science.—A gold medal of the value of $25, or that sum in money, the gift of James Suydam, is awarded annually to that senior in the Technical Science course (or in the General Science course if one-half or more of his hours during the four years be devoted to science and mathematics) who has attained honor rank. The award is made for the highest average grade in all scientific subjects, required or elective, pursued by him during his four years' course.

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Joseph P. Bradley Prize in Mathematics.—Founded by the Honorable Joseph P. Bradley, LL.D., of the class of 1836, this prize is maintained by his son, Charles Bradley, A.M., of the class of 1876. It consists of a valuable mathematical work which is awarded annually to the student of the senior class who presents the best solutions of a set of mathematical problems proposed to the class during the second term by the Professor of Mathematics.

Elizabeth Appleton Memorial Prize in Moral Science.—By a gift of $500 from the Reverend Samuel E. Appleton, D.D., of the class of 1852, this prize was founded in the name of his mother, Mrs. Elizabeth Appleton. The income from this fund ($25) is awarded to that member of the senior class who passes the best examination in moral science.

Ann Van Nest Bussing Prizes in Extempore Speaking.—Mrs. Ann Van Nest Bussing has given $1,000 the income of which ($50) is to be expended each year for books to be selected by the President of the College and given as follows: the first prize ($30) to that member of the senior class who proves himself to be the best extemporaneous speaker; the second prize ($20) to the second best extemporaneous speaker of the senior class.

Class of 1876 Prize in Political Science.—The class of 1876 has given $1,000 as the foundation of a prize fund for the encouragement of the study of political science. The income of this fund is awarded each year to a member of the senior class (either classical or scientific) "on the basis of an original essay on some subject in political philosophy, assigned by the professor of that science in the College, and upon a competitive examination in a textbook also selected by him;" the committee of award to consist of "three competent persons selected by the Faculty of the College, at least one member of the committee to be a member of the class of 1876 as long as any may be living."

Jacob Cooper Prize in Logic.—An annual prize of $100 has been established in memory of the late Professor Jacob Cooper, LL.D., formerly Professor of Logic and Mental Philosophy in the College. This is the income of a gift of $2,000 by Leonor F. Loree, M.SC., C.E., of the class of 1877 and a trustee of the College, and the Honorable William W. Crapo, a classmate of Doctor Cooper in the class of 1852 at Yale College. This prize is open to all students in full standing in the senior class. The conditions relating to competition may be learned by consulting the Professor of Logic.

Theodore Frelinghuysen Vail Prize for Scholarship.—An annual prize of $50, the gift of Theodore Frelinghuysen Vail, A.M., of the class of 1851, is awarded to that member of the graduating class who

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stands highest in average grade of scholarship in all the subjects pursued throughout his senior year, provided he has received an average of B or above and no single grade lower than C.

Thomas Henry Grant Prize in Agriculture.—A prize of $25, the gift of Thomas Henry Grant, M.SC., of the class of 1881, is awarded annually to that member of the graduating class who stands highest in average grade of scholarship in all the technical elective subjects of the senior year in the four-year Course in Agriculture, provided he also ranks high in each prescribed subject during the same year.

John Bernhard Smith Memorial Prize in Electrical Engineering.—An annual prize of $25, the gift of Mrs. John Bernhard Smith, is awarded to that member of the senior class in the electrical engineering department who passes the best competitive examination in some electrical engineering subject to be assigned by the department.

Edward Fuller Brooks Memorial Prize in Civil Engineering.—By the gift of $1,000, Miss Cora S. Brooks has founded a prize of $50, in memory of her father, Edward Fuller Brooks, C.E., of the class of 1872. This prize is awarded to that member of the graduating class in the course in Civil Engineering who stands highest in average grade of scholarship in all engineering subjects pursued during his course, provided he has maintained an average grade of "B" or above in those subjects.

Gillett Wynkoop Prize in Chemistry.—A prize of $25, the gift of Gillett Wynkoop, A.M., of the class of 1891, is awarded to that member of the graduating class who has made the best record in the courses in chemistry during his four undergraduate years in the Technical course in Chemistry, provided he has maintained an average grade of "B" or above in those courses.

SENIOR AND JUNIOR PRIZES

Jacob Brodhead Classical Prize.—This prize was founded by the Reverend Jacob Brodhead, D.D., and his son J. Romeyn Brodhead, LL.D., by the gift of $700. The income ($35) is awarded annually to that senior or junior pursuing the Classical course who passes the best examination in an assigned Latin or Greek text and who also submits the best essay, written in English, on an assigned Latin or Greek subject; the text assigned to be in Latin and Greek in alternate years.

John Parker Winner Memorial Prize in Mental Science.—This prize consists of $25, given by John Winner, Jr., A.M., of the class of 1866, and his wife, in memory of their son, John Parker Winner. It is open to competition for students in any course leading to a degree,

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who are pursuing the study of mental philosophy, and is awarded annually to the one who passes the best examination on some work and writes the best essay on some subject assigned by the Professor of Philosophy, the essay to consist of not less than 3,000 words.

William H. Van Doren Prize for Essay on Missions.—This prize of $35, the gift of the Reverend William H. Van Doren, D.D., is open to competition for members of the senior and junior classes and for members of the Theological Seminary in New Brunswick. It is awarded annually for the best essay on Christian missions.

Joseph P. Bradley Prize in Roman Law.—An annual prize was founded by the Honorable Joseph P. Bradley, LL.D., of the class of 1836, late Associate Justice of the Supreme Court of the United States, and is maintained by his son, Charles Bradley, A.M., of the class of 1876. It consists of a valuable work on Roman law.

Municipal Management Prize.—A resident of Highland Park offers a prize of $50 open to competition by members of the junior and senior classes. This prize is awarded to the writer of the best essay, if judged to be of sufficient merit, on the subject: *A Study of the Organization of Minor Municipalities in New Jersey.*

The design of the donor is to encourage investigation in the structure and municipal activities, actual and possible, of the borough, town, township, and village in New Jersey. It is suggested that the work include a study at first hand of neighboring boroughs, one or more, such as Highland Park, Metuchen, Milltown or similar municipal corporations.

Heidingsfeld Prize in English Bible and Ethics.—The widow of Julius Heidingsfeld, Esq., offers in his memory an annual prize of $50 to the student who has attained highest scholarship in the department of English Bible and ethics.

JUNIOR PRIZES

Irving S. Upson Prizes in Oratory.—These prizes, of $30 and $20 respectively, were founded by Irving S. Upson, A.M., of the class of 1881, late Treasurer and Registrar of the College, by the gift of $1,000. They are awarded annually by a special committee to those junior orators (see page 172) who are adjudged the best writers and speakers.

SOPHOMORE PRIZES

Myron W. Smith Memorial Prizes in Oratory.—These prizes were founded by Lyndon A. Smith, M.D., in the name of his son, Adjutant

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Myron W. Smith of the class of 1858, who gave his life in the Civil War to the cause of his country. They consist of a first prize of $15 and a second prize of $10, which are awarded annually to the best and second best orators of the sophomore class. Only those students who have pursued the regular studies from the beginning of the freshman year are permitted to contend for these prizes. (See page 173)

Peter Spader Prizes in Modern History.—These prizes, founded by P. Vanderbilt Spader, A.B., of the class of 1849, in memory of his father, Peter Spader, are two in number ($20 and $15), the income from $400 and $300 respectively, and are awarded annually to those members of the sophomore class who present the best essays on some subject in modern history selected by the Professor of History with the approval of the Faculty. The subject is announced at the close of the freshman year and the competing essays are to be submitted on or before the last Monday in May of the sophomore year.

FRESHMAN PRIZES

Tunis Quick Prize in English Grammar and Spelling.—This prize of $15, established by P. Vanderbilt Spader, A.B., of the class of 1849, in memory of his grandfather, Tunis Quick, is the income of a gift of $300. It is awarded annually to that member of the freshman class in any course who passes the best written examination in spelling and English grammar under the direction of the Professor of English Literature at as early a day as convenient in the second college term.

Edward Livingston Barbour Prizes in Declamation.—Two annual prizes, of the value of $15 and $10, are offered by the Professor of the Art of Public Speaking. The eight members of the freshman class who stand highest in public speaking during the entire year may compete before a committee appointed by the Faculty.

GENERAL PRIZES

Samuel and Louisa Van Vechten Prize for Essay on Missions.—By the gift of $1,000 in 1884 the late A. V. W. Van Vechten founded a prize of $50 in honor of his mother, Mrs. Louisa Van Vechten, and his father, the Reverend Samuel Van Vechten, D.D., the prize "to be given annually to that student of Rutgers College who shall be adjudged by the Faculty of the Theological Seminary of the Reformed Church of America, at New Brunswick, to have presented an article original with himself and the best submitted—the most conclusive and inspiriting

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to strengthen faith in and love for Foreign Missions." The essays are limited to 3,000 words and are to be presented on or before May 1 of each year.

Daughters of 1812 Prize in History.—The New Jersey Chapter of the National Society of the United States Daughters of 1812 offers a prize for the best study of some problem connected with the War of 1812, assigned by the Department of History. The amount of the prize is subject to variation (in 1919 it was $25). Students desiring to compete should consult the Department regarding the form in which the paper is to be presented.

Mary E. Horton Prize in Music.—In recognition of the services to education rendered by Mary E. Horton, first Professor of Greek in Wellesley College, a fund of $3,000 has been given to the College. From the income of this fund a prize is offered to that student who, by competitive trial or in such other manner as the President may determine, shall be designated as leader in the musical exercises in which the College as a body engages. Payment of the prize will be made in cash in equal instalments at the end of the first and second terms.

Chicago Alumni Club Prize in Literature and Library Use.—The Rutgers Club of Chicago offers a prize of $35 for the best course of general reading pursued, together with proficient use of the library. The prize is open to all undergraduates. The basis of award is (1) an examination, testing the amount, quality, and thoroughness of the reading, and (2) a formal record, showing the field covered and the library method. The winner of the prize is not allowed to compete in subsequent years.

Alliance française Prize in French.—The Alliance française de New Brunswick makes annual award of a silver medal to that student of Rutgers College who, in a special competitive examination, gives evidence of the greatest proficiency in French. The contest is open to all undergraduates whether or not they pursue the study of French in course. The winner of the medal is not allowed to compete in subsequent years.

John P. Wall Targum Prizes.—A first prize of $10 and a second prize of $5, the gift of John P. Wall, are awarded annually by the Targum Board for the best and second best contributions to *The Targum*, the weekly student paper.

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SHORT COURSE PRIZES

Thomas Henry Grant Prizes in Agriculture.—Five prizes, the gift of Thomas Henry Grant, M.SC., of the class of 1881, are awarded annually in the Short Courses in Agriculture, as follows: A prize of $5 to the student who makes the highest attainments in any course; five prizes of $4 each to the student in each of the five courses who takes highest rank, exclusive of the winner of the first prize.

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GROUNDS AND BUILDINGS

GROUNDS

Queen's Campus

QUEEN'S CAMPUS, in large part a gift from the estate of James Parker, was acquired early in the nineteenth century when Queen's College, the oldest of the present buildings, was erected. It is spacious and beautiful with lawn and elm trees and now has seven buildings erected upon it: Queen's College, the Alumni and Faculty House, Van Nest Hall, the Daniel S. Schanck Observatory, Geological Hall, the Sophia Astley Kirkpatrick Memorial Chapel, and Winants Hall.

Neilson Campus

The Neilson Campus, given in part during former years and in greatest part in 1906 by James Neilson, A.M., LL.B., of the class of 1866 and a trustee of the College, adjoins Queen's Campus to the north and has erected upon it New Jersey Hall, the Robert F. Ballantine Gymnasium, the Ralph Voorhees Library, the Engineering Building, the Chemistry Building, the Entomology Building, and the J. Howard Ford Dormitory.

Neilson Athletic Field

The Neilson Athletic Field, the use of which is donated to the Athletic Association also by Mr. Neilson, lies about ten minutes' walk from the main campus, and offers all possible advantages for football, baseball, track athletics, and military drill. It has a quarter-mile track, bleachers with a capacity of 3,000, and a newly erected field house with shower baths and lockers.

College Farm

The College Farm of 350 acres, located about one and one-half miles south of the College, is the place of field work of the agricultural courses and of the College and State Agricultural Experiment Stations. Here also are the agricultural buildings equipped for laboratory work in horticulture, animal, dairy, and poultry husbandry, farm crops

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and soil fertility. The most important varieties of corn, oats, and wheat as well as forage plants are grown in the variety tests. These afford ample opportunity for the study of crops both during the growing period and in the laboratory. Business methods are applied to the conduct of several of the departments of the Experiment Stations. The latter serve, therefore, as object lessons in modern profitable agricultural practice.

BUILDINGS ON THE CAMPUS

Queen's College (1808-1809)

Queen's occupies the central position of the group of college buildings. It contains the administrative offices, twelve recitation rooms, and the Fine Arts lecture hall. It was designed and built by John McComb, the architect of the New York City Hall, and architecturally is considered one of the best structures of its type.

Alumni and Faculty House (1841-1842)

This building, erected as the President's house, so used for many years, and more recently devoted to the department of fine arts, is now designated for the social uses of alumni and faculty. The Rutgers Club of New Brunswick with the assistance of class gifts has renovated the house, furnished it, and assumed its maintenance.

Van Nest Hall (1845)

This building was named for Abraham Van Nest, a liberal trustee, in recognition of his services and gifts to the College. In 1893 it was dignified by the addition of an appropriate stone porch, the gift of Mrs. Ann Van Nest Bussing, daughter of Abraham Van Nest, who at the same time refitted the east side of the second story into a handsome hall for the exercises in elocution. During the same year the Trustees added a third story to the original building.

The rooms on the first floor originally used by the Peithessophian and Philoclean Literary Societies were thoroughly refitted in 1891 and are at present devoted to the needs of the Young Men's Christian Association and the department of history. The second and third floors are occupied by the departments of English and education.

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Daniel S. Schanck Observatory (1865)

The observatory, a gift of Daniel S. Schanck, is a two-story brick building with revolving dome. The main part contains the equatorial telescope; on the west side is an extension for transit observations containing the meridian circle.

This building is used in connection with the course in general astronomy to give a knowledge of the sun, moon, planets, etc. Those who elect mathematics and astronomy receive instruction in the use of the instruments and take part in the observations.

The longitude of the observatory is $0^h\ 10^m\ 29^s$ east of the New Naval Observatory at Washington, D. C. The latitude is 40° 30′ N.

Geological Hall (1871)

Besides the department of geology and mineralogy this building also provides temporary accommodations for the department of physics. The latter occupies six rooms on the main floor and two in the basement. There are two lecture rooms, an apparatus room, a general laboratory, and a laboratory for work requiring even temperature.

The department of geology and mineralogy occupies the rest of the building, which consists of a classroom; a laboratory for determinative mineralogy; an exhibition room, 40 by 84 feet with a gallery, containing the Geological Museum; a combined office and departmental library; and storerooms.

Sophia Astley Kirkpatrick Memorial Chapel (1872)

The chapel was erected with money bequeathed to the College by Mrs. Sophia Astley Kirkpatrick. The building is of brownstone in the French Gothic style of the fourteenth century. With its chancel and gallery it has a seating capacity of about 800, and is used for the daily morning prayers and for the Sunday preaching service. Upon its walls hang the portraits of many of the presidents, trustees, and professors who have in the past served the College. The George Buckham Memorial Organ, given by Mrs. G. B. Wright in memory of her father, a graduate of the class of 1832, is a modern instrument of 32 stops, built and installed by the Ernest M. Skinner Co. It is used by the director of music both for the religious services and for frequent public recitals of choice compositions. Above the chancel there is a large window to Dr. J. R. Hardenbergh, the first president of the College; and, in the nave, are found several bronze busts and memorial tablets, with many class windows.

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New Jersey Hall (1888-1889)

The erection of this building was authorized by an act of the State Legislature approved April 23, 1888. It affords laboratories and offices for some of the departments of the State and Agricultural College Experiment Stations and, by the courtesy of the Board of Managers of the State station (who also constitute the State Board of Visitors to the Agricultural College), for the laboratories and class-rooms of the departments of botany, physiology, and zoology.

Winants Hall (1890)

This building was given to the College by Garret Ellis Winants, a trustee of the institution. It provides dormitory accommodations for about ninety and a dining hall for such students as choose board at the College. (See Board and Rooms, page 224.)

Robert F. Ballantine Gymnasium (1893)

The gymnasium, the gift of Robert F. Ballantine, a trustee of the College, is a fine specimen of the colonial style of architecture. It affords excellent facilities for physical instruction and exercise and for military instruction and drill.

The front of the building is devoted to the purposes of administration and the rear to the gymnasium and drill room proper. Offices are also provided for the professor of military science and the director of the gymnasium. The combined gymnasium and drill room afford an unobstructed space 100 by 600 feet in dimensions. Suspended from the truss-roof is a running-track 280 feet in length. Space is also afforded for the armory of the cadet corps, a large room is provided for lockers, and another for military equipments. In the basement are four bowling alleys.

Swimming Pool (1914).—An extension of the Robert F. Ballantine gymnasium, 45 by 100 feet, adjoining the main building on the north side, has been completed at a cost of more than $25,000, the gift of Mrs. Robert F. Ballantine. The extension harmonizes in style with the main gymnasium. On the ground floor is a modern, fully equipped swimming pool, the tank being 75 by 26 feet, with ornamental tiling, and a complete filtering system, insuring, by the use of alum and chlorine, a constant supply of pure water. The depth of the water in the pool runs from 4½ feet at one end to 9½ feet at the other. Seating capacity is provided for about 250 spectators. The pool is in charge

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of an experienced swimming teacher. The shower bath room, 15 by 20 feet, provides space for 15 modern fixtures. The second story, 100 by 45 feet, is used as a regular gymnasium floor.

Ceramics Building (1902)

This building contains a commodious laboratory especially adapted and arranged for the purpose of housing the ceramic equipment. The workshop includes about 1,700 square feet of floor space, providing ample room for the machinery installed. There are also storerooms, kiln rooms, a classroom, and the director's office and laboratory.

Ralph Voorhees Library (1902-1903)

This building, donated by the late Ralph Voorhees, Esq., of Clinton, is built of reddish-brown stone in the general style of Queen's College.

A central rotunda and its east and west wings contain the reading desks, the filing cases for periodicals, the card catalog, and the loan desk. Two rooms, one containing the Henry Janeway Weston Memorial Collection of books, engravings, and curios relating to Napoleon I, and the other containing collections of manuscripts, pamphlets, and articles of historical and local interest, are at the front of the first story. Over these are rooms for the Spader and Stephens libraries. In the entrance is the James B. Laing coin collection. To the north of the reading room is the main stack room.

Engineering Building (1908)

This building was erected at a cost of $70,000, of which amount $25,000 was given by Andrew Carnegie. The foundations and the rear extensions are built of concrete and the superstructure of brick, and the building is fireproof throughout. It contains 7 classrooms, 5 laboratories, 6 offices for professors, and 3 drafting rooms, one of which accommodates 100 students. It provides accommodations for the departments of civil engineering, electrical engineering, and mechanical engineering.

The main structure is three stories high, the first floor being devoted to the uses of the electrical and mechanical departments. The rear extensions, one story in height, furnish accommodations for the mechanical engineering and the dynamo laboratories. On the same level are the high-pressure boiler room and the civil engineering labora-

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tory for testing strength of materials. The second floor contains a large lecture room for the use of the three departments and the classrooms and offices of the department of civil engineering. The third floor is devoted exclusively to the drafting work. The design of the drafting room is such that the light is abundant and uniformly diffused without glare.

Chemistry Building (1910)

This building, which is occupied wholly by the department of chemistry, is of concrete and brick two stories high with basement.

The first floor provides classrooms, a large lecture room, library, museum, office, private laboratory, and lecture preparation room. The second floor accommodates the divisions of qualitative and quantitative chemical analysis and comprises two large laboratories with corresponding offices for instructors, two smaller laboratories for special work, laboratory for electrochemical analysis, supply room, balance room, hydrogen sulphide room, etc. The basement provides two large laboratories, one for first-year chemistry and the other for fourth-year chemistry, with balance room, combustion room, dark room, machine room, boiler room, and large storeroom.

Entomology Building (1911)

The Entomology Building, which is about 50 by 30 feet in size, consists of two full stories with attic and basement, and is conveniently located near New Jersey Hall. The walls are of brick, the partitions of hollow tile with plaster board finish, the floors of a fireproof composition, and plumbing and wiring are exposed, thus reducing the danger from fire to a minimum.

The first floor provides teaching facilities, including a laboratory room 26 by 28 feet, with modern work tables and equipment. The second floor provides accommodations for the entomological work of the State and College Experiment Stations, including laboratories, technical library, and offices for the State Entomologist, the Entomologist to the Experiment Stations, and scientific assistants in the entomological work of the State.

Provision is made for the extensive collections of the department, and the walls are so conserved as to afford the maximum space for storage purposes. Photographic rooms are provided and there is storage room for supplies in the attic.

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John Howard Ford Dormitory (1914)

This, the seventh building on the new northward extension of the campus, erected at a cost of about $125,000, is the gift of the late John Howard Ford of New York City, a trustee of the College. It is constructed of hard-burned red brick with trimming of white Vermont marble and is designed to accommodate about eighty students. The interior is conveniently arranged in suites of studies and bedrooms. Shower baths and dressing rooms are also provided and the central hall contains a reception room on the main floor. (See Rooms, page 225)

Boathouse

With funds secured from the students, alumni, and friends of the College a commodious boathouse has been built, conveniently situated for the use of those interested in boating and canoeing.

BUILDINGS ON THE FARM

Short Course Building (1906-1907)

This building, erected by a special appropriation of the State Legislature for the use of the short courses in Agriculture, contains large well-lighted rooms for dairy work in handling milk and cream, for butter making, and for the retail trade; laboratories for milk testing, and for horticulture, entomology, and home economics; recitation rooms, and offices for the instructors.

Poultry Administration Building (1911)

The Poultry Administration Building forms a portion of the equipment of the Poultry Department of the State Experiment Station established by an act of the Legislature of 1911. Its large classroom contains a poultry exhibit and is arranged for effective instruction. The building has also pathological laboratory, isolation pens, cold-storage room, dark room, and offices. The other buildings of the Poultry Department include a large hollow tile incubator cellar, Mammoth brooder house, long laying houses, and several type houses. There are in all 56 laying pens where 1,000 mature birds are wintered. Representatives of twenty breeds of poultry are kept on the plant.

In 1914 a tract of 23 acres was set aside to be developed into an experimental and educational poultry farm. Some of the buildings of the old plant have been removed to the new location, and a com-

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plete equipment, comprising over 100 separate pens, for the keeping of 3,000 laying hens, has been installed.

The department is directing the Vineland International Egg Laying and Breeding Contests at Vineland, New Jersey. The first of these contests began November 1, 1916, and extended over a period of three years, with one hundred pens of ten birds each, and an area of about eight acres being reserved for the work. The second contest opened November 1, 1919, with twenty birds in each pen.

Greenhouses (1908-1912)

One range of greenhouses, erected in 1908 for instruction work in horticulture, comprises a service building 17 by 60 feet and two sections of glass each 18 by 75 feet. This offers an opportunity for practical exercises in seed testing, seed sowing, transplanting of plants, and other greenhouse work.

During 1911 and 1912 a large range of greenhouses, consisting of a service building, two sections of glass 33 by 150 feet, one section 33 by 75 feet, and two sections 8 by 16 feet, was erected for investigational work. These demonstrate the latest forms of greenhouse construction and the investigations being conducted in them offer special opportunity for senior students in horticulture.

Horticultural Building (1920)

The State Legislature in 1919 appropriated $75,000 for the construction of a horticultural building. It will be located at the College Farm, and building operations are to begin early in the spring of 1920. The structure will be fireproof, with two stories and basement; it will contain classrooms and laboratories for horticultural work and administrative offices for members of the horticultural department staff.

Agricultural Building (1914)

An appropriation of $100,000 was made by the New Jersey State Legislature in 1912 for the erection of a building to be used for investigation and teaching work in agriculture. It was completed in October, 1914, and occupied by the departments of the College and Experiment Stations. It is a three-story fireproof structure of brick, concrete, and terra-cotta.

This building contains the administration offices of the Station and of the various departments, besides classrooms and laboratories

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for station and college work. The third floor is occupied by the departments of soil chemistry and bacteriology, plant pathology, and seed analysis. Large, well-equipped laboratories are at the disposal of each department. On the second floor the departments of botany and agronomy have their offices and laboratories. The agricultural library containing sets of state and government publications, herd books, books on various agricultural subjects, agricultural periodicals, and scientific magazines, furnishes a useful and convenient place for reference. These facilities, with laboratories for soil physics, soil analysis, and horticulture, and a large auditorium, with a seating capacity of about 600, make the building well-suited for the efficient performance of college and experiment station work.

Dairy Barn

The dairy barn is modern in every way and exhibits all the structural features essential to the comfortable housing of a healthy herd of cows and the production of a good quality of market milk. The dairy herd consists of 75 animals representing the four dairy breeds and milking Shorthorns. In the herd are individuals with the best breeding that the country has produced. This barn and herd make possible excellent courses in the breeding, feeding, and management of high-class dairy stock and studies in sanitary milk production.

Other Buildings

Other buildings have been erected for use in the short courses, including a pavilion 60 feet in diameter for exhibiting and judging the various breeds of live stock; a farm machinery building; also a carpentry shop, stables, dairy buildings, silos, poultry houses, greenhouses, tool houses, and storage rooms.

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COLLECTIONS AND EQUIPMENT

COLLEGE LIBRARY

THE LIBRARY contains 104,000 volumes and about 20,000 pamphlets and receives about 400 periodicals. It is open each week-day except Saturdays and holidays, from 8 a. m. to 10 p. m., Saturdays from 8 a. m. to 6 p. m.; holidays from 8 a. m. to 12 m. Students are allowed free access to the books and are encouraged to become familiar with the proper methods of using a library for literary work.

In 1887 P. Vanderbilt Spader of the class of 1849 gave to the College his personal library, valued at $15,000 and consisting of about 5,000 books, among them many valuable art volumes and collections especially rich in State and local history and books of reference. By his will the College received $10,000, the income of which is expended for the maintenance and increase of the P. Vanderbilt Spader Library Gift.

By the gift of a permanent fund of about $10,500 from the Honorable Robert H. Pruyn the Library is supplied with reference works and periodicals. The income of other funds provided by James Suydam, Esq., Mrs. Marian J. Patterson, Professor Albert S. Cook, LL.D., of the class of 1872, and Mrs. Katherine Janeway Weston, is used for the purchase of books in literature, language, history, and philosophy.

A valuable private library of about 1,800 volumes and the sum of $5,000, known as the Benjamin Stephens Fund, for its maintenance and increase, were left to the College by the will of the late Benjamin Stephens of the class of 1844.

The James B. Laing Collection, consisting of valuable and rare coins, together with many other specimens of coins, paper money, and medals presented to the College by various donors, is also housed in the Library and is on exhibition in glass cases.

SAGE LIBRARY

Through the courtesy of the Theological Seminary of the Reformed Church the Sage Library, containing about 54,000 volumes and 9,000 pamphlets, is open to students of Rutgers College for consultation

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during each week-day from 9 a. m. to 12:30 p. m., 2 p. m. to 4:30 p. m., 7:30 p. m. to 9 p. m.; and under certain limitations books may be drawn from it.

HISTORY OF ART

The Fine Arts Room contains some of the art collections of the College, including the Thomas L. Janeway Memorial Collection of casts and photographs. This latter collection, intended to illustrate classical archeology, is the gift of the heirs of Thomas L. Janeway, M.D., of the class of 1863. The room contains:

1 Casts from marbles typical of the chief periods in the history of sculpture.

2 Five hundred casts from engraved gems (cameos and intaglios) and coins, Greek and Roman. These were selected to illustrate the historical development of gem engraving especially in its best periods.

3 Fifteen hundred stereopticon slides of architecture, sculpture, and painting.

4 Fifteen hundred photographs of drawings, sketches, pictures, marbles, and buildings.

5 Many framed photographs and engravings.

6 Several oil paintings and water-color drawings.

The collections are used continually in lectures to illustrate not only the art of the different nations but their life, literature, and social culture.

The room is arranged for the illustration of lectures with both transparent and opaque lantern materials.

HISTORY

The Henry Janeway Weston Memorial Collection, consisting of books, engravings, and curios relating to Napoleon I, is deposited in a room in the Ralph Voorhees Library and is available for the use of students. This valuable collection was given by Mrs. Katherine Weston, who also furnished the room and bequeathed a fund for maintenance and extension of the collection.

ASTRONOMY

The equatorial refracting telescope, with an aperture of 6½ inches, has a driving clock, a position micrometer, a number of eye pieces of various powers, ranging from 50 to 600, and a solar attachment for the study of sun spots. The declination circle is 10 inches in diameter,

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reading by verniers to 1 minute of arc, and the hour circle, 7½ inches in diameter, reading by verniers to 6 seconds of time.

The meridian circle used for transit observations was made by Stackpole of New York. It has an object glass 4 inches in diameter and circles 17 inches in diameter reading by two microscopes with micrometer screws to single seconds of arc.

The Observatory has also a sidereal clock, a chronograph, a mean solar clock, and a reflecting circle.

PHYSICS

The lecture apparatus comprises the usual instruments. The laboratory contains general apparatus such as dividing engine, a set of United States standard weights and measures, metric standards, spherometer, planimeter, etc.; various optical instruments, including a spectrometer and optical bench with full set of accessories; the necessary apparatus for experiments in heat, including calorimeters, thermoelectric pyrometer, steam engine, gasoline engine, and Callendar apparatus; also a full set of electrometers, galvanometers, rheostats, dynamos, motors, telephones, and telegraph instruments.

CIVIL ENGINEERING

The collections for illustrating the instruction given in the civil engineering course comprise a great variety of models showing details of construction in wood, iron, and stone, with a full set of Schröder and many Olivier models in descriptive geometry, besides blue prints, working drawings, and lithographs of roof and bridge trusses. There are also instruments of precision for various uses such as planimeters, pantagraphs, sextants, and elipsographs. Complete outfits of engineering and surveying instruments are provided for the use of students in the surveying classes.

A laboratory for testing cement and concrete is fitted up in the basement of the Engineering Building. It is equipped with long lever and shot testing machines, steaming and boiling apparatus, damp closet, autoclave apparatus, mechanical rotary sieve, 20 glass mixing tables, a special apparatus for testing the porosity of cements, and a full line of tools and apparatus. Machines have been installed for testing the tensile, compressive, transverse, and torsional strength of other engineering materials; and pumps, tanks, meters, and weirs for hydraulic experiments are also available.

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ELECTRICAL ENGINEERING

The electrical laboratory is provided with two 15-horsepower direct-current constant speed motors, a 7.5-horsepower adjustable speed motor, a 6-kw. Edison direct current dynamo, a 6-horsepower Edison shunt motor, a 4-kw. Crocker-Wheeler compound dynamo, a 5-horsepower Crocker-Wheeler series motor; a Fort Wayne double current generator which can be used to furnish either direct current or single-phase, three-phase, and quarter-phase alternating current, or to convert from alternating current to direct current or *vice versa;* two General Electric 7.5-kw. revolving field polyphase alternators specially designed for laboratory use, a two-phase alternator designed and built by one of the students, a 4-horsepower polyphase synchronous motor, a 5-horsepower two-phase induction motor with auto-starter; transformers of various types and capacities, brake and transmission dynamometers, the usual outfit of commercial measuring instruments, an electro-dynamometer, galvanometers of various types, a Kelvin double bridge, a Leeds and Northrup standard Wheatstone's bridge, and a Leeds and Northrup standard potentiometer for standardizing measuring instruments; standards of electromotive force, of resistance, of self-induction, and of capacity, an Ayrton-Perry secohmmeter, an Epstein hysteresis meter, and a large assortment of resistance boxes and other apparatus.

MECHANICAL ENGINEERING

The equipment provided for this course belongs chiefly to the laboratory, with emphasis upon power engineering. The list of instruments and small apparatus includes pressure gages, engine indicators, draft gages, thermometers, pyrometers, steam calorimeters, water meters, speed indicators, etc., with provision for testing and calibrating them, also apparatus for flue-gas analysis and for the testing of lubricants.

The principal items of large equipment now in place are:

A Babcock and Wilcox boiler, rated at 135 horsepower, with all accessories, including forced draft apparatus and Cochrane feed-water heater, and especially arranged for the convenient conduct of boiler trials.

A 60-horsepower high-speed Ames engine direct connected to a 35-kilowatt Crocker-Wheeler generator. This unit besides being available for testing takes the regular service of supplying current for the dynamo laboratory.

A small De Laval steam turbine with a centrifugal pump, steam

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pumps, injectors, and a pulsometer. With these pumps a cistern of 5,500 gallons capacity is provided under the floor, and tanks, meters, and a weir, for measuring the water handled.

An Ingersoll-Rand air compressor, and a Westinghouse compressor (air brake type).

Surface condensers and accessories for making steam consumption tests on all the engines.

Several gas engines for illuminating gas and liquid fuels.

The hydraulic apparatus belonging to the department of civil engineering is mostly installed in this laboratory, and is used for work in the senior mechanical laboratory course.

The latest additions to the laboratory are along the lines of instruments, fan blowers, and some units of aeronautical equipment.

CHEMISTRY

The department occupies the whole of the Chemistry Building. The laboratories, four large well lighted rooms, are equipped in the most modern manner. Work tables, balance rooms, and small special laboratories, all supplied with every convenience for facilitating work, are placed at the disposal of the students. The installation of a complete new ventilating system insures a constant supply of fresh air.

The various classrooms are arranged with many devices for making practical demonstrations in the courses covered and new and special pieces of apparatus are being constantly acquired for such demonstrations and investigations.

GEOLOGY AND MINERALOGY

Museum.—The Geological Museum contains about 30,000 classified and labeled specimens including about 13,000 mineral specimens, 2,000 rock specimens, and 6,000 fossils, besides collections in several related sciences. These furnish abundant illustrative material for instruction in geology and mineralogy.

Laboratory and Classroom Equipment.—Besides the collections of the Museum, there are geologic and topographic maps, lantern slides, photographs, and projection apparatus.

The mineralogic laboratory is equipped for the study of crystallography, the physical and chemical properties of minerals, and for practice in the determination of unknown specimens.

Libraries.—A departmental library of about 1,500 volumes is available for reference and advanced study. The geologic department

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of the College Library receives the publications of the geological surveys of the various states and of the United States, besides many similar publications of other countries and the leading periodicals relating to geology, mineralogy, and mining. It has also been greatly enriched by the addition of the private libraries of the late Professors George H. Cook and Albert H. Chester.

CLAY-WORKING AND CERAMICS

The equipment of the laboratory is extensive, consisting of machinery for the manufacture of brick, tile, and pottery, as well as apparatus for the physical and chemical testing of ceramic materials.

The brick-making outfit consists of a large auger brick machine and a small experimental auger brick machine, a horizontal pug-mill, a dry-pan, which may also be used as a wet-pan, and a down-cut board-delivery table. The tile and the pottery machinery include a miniature slip-house plant, having a blunger, agitator, lawn-screen, slip-pump, and filter-press, a four-jar glaze-mill, large and small ball-mills, a potter's wheel, a combination jigger and pull-down, a potter's pug-mill, a hand-jigger, a reversible bench-lathe, a tile-press, a wad-machine, bench-whirlers, and other necessary appliances, all of approved design and representative of the types of construction used in the manufacture of a wide variety of wares.

Two oil-fired kilns and two gas-fired kilns are provided for the burning of the test pieces and ceramic wares made in the laboratory. There is also pyrometric equipment for high temperature measurements and for control of the firing.

The library of the department includes current and bound numbers of ceramic periodicals and most of the available works on ceramics and related subjects.

A collection of ceramic wares is also in process of installation.

AGRICULTURE

College Farm.—The barns have been built with a view to convenience and economy of space. The equipment is of the most modern type, including all of the necessary tools and implements required for farm practice. The live stock includes representatives of the leading breeds of horses, dairy cattle, swine, and poultry.

On the farm the intensive system is practiced; it includes soiling, green manuring, and all the natural and artificial aids necessary in continuous cropping to secure maximum yields. A special study is

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made of forage crops for the dairy and all the leading crops in this group are grown. The farm is on the whole an object lesson not only in modern and profitable practice but in showing the economical manufacture of crude crop material into high class products, such as milk and cream, for which all the modern appliances are used.

On the experimental areas the leading varieties of fruits, berries, and vegetables are grown and scientific methods of fertilizing, manuring, and cultivating are used. The plant houses, used primarily for experimentation in soils and the forcing and breeding of plants, afford opportunity for students to observe the behavior of plants under glass.

Models of farm buildings illustrating the best methods of construction besides those illustrating various interior arrangements, such as stalls for horses and cattle, are available for instruction.

Experiment Stations.—Besides the equipment for direct instruction the student has brought under his observation the equipment of the research laboratories of the Agricultural Experiment Stations in working operations, such as the instruments used in the study of milk, soils, fertilizers, bacteria, mycology, photomicrography, insecticides, fungicides, and in other experiments relating to agriculture.

PHYSIOLOGY

The department occupies one-half the first floor and one-half the basement floor of New Jersey Hall. The laboratories are provided with modern equipment, making possible the usual work in physiology and biochemistry. Ample space and special apparatus are available for those desiring to carry on investigation. A good working library, containing complete files of all the American journals on the subject and several of the most important European ones, enables the student to consult the best recent literature.

ZOOLOGY

The laboratories are furnished with all equipment needed for instruction in the zoological and premedical sciences. This includes thirty-five high-grade compound and dissecting microscopes, microprojection and microphotographic outfits, Minot rotary microtome, and full supply of histology apparatus, together with a collection of slides and museum specimens of animal parasites for use of medical and sanitary science students.

Plaster models illustrating the structure of man, horse, cow, bird, reptile, fish, snail, starfish, ascidian, medusa, and worms, with over one hundred wall charts (including all of Leuckart's) are available.

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The museum of comparative zoology contains a collection of stuffed birds, skeletons, and alcoholic specimens. The collection of the late Dr. Julius Nelson illustrating the biology of the American oyster is probably the most nearly complete collection of oyster specimens in this country.

Students pursuing the course in economic molluscs have access during the summer to the fully equipped floating laboratory and power boat of the Experiment Station.

ENTOMOLOGY

As part of the equipment for instruction, research, and insect control a large collection of insects has been accumulated. It falls in three groups: the economic, the general systematic, and the special collections.

The economic collection consists of material illustrating the life history and habits of a large number (catalog being prepared) of species of insects that influence in an important way the welfare of mankind. Most of the material is in wooden boxes, measuring about 16 by 20 inches with glass covers. The rest of it is included in Riker mounts.

The general systematic collection contains many thousands of species (catalog being prepared) and is stored mainly in Schmidt boxes.

The special collections are the Hulst and the Smith groups:

The Hulst Collection.—The Hulst Collection of *Lepidoptera* represents the life work in entomology of the Reverend George D. Hulst, PH.D. It consists of two parts: the first, a general collection of butterflies and moths, was presented to the College in 1890 and was received and cared for soon afterward by the Professor of Entomology; the second part, though included in the original gift, was retained by the donor during his lifetime and increased in value by the scientific labor expended on it. This came into the possession of the College in 1901 and contains 1,217 species, of which 549 are types of descriptions written and published by Doctor Hulst, in 3,830 specimens. In the families studied by him this collection is without a peer. Exclusive of these special families there are in the first part 828 species, including twelve types, in 2,775 specimens. The entire collection thus contains 2,195 species, 561 types, and 6,605 specimens.

The Smith Collection.—The Smith Collection of *Lepidoptera* represents the work done by the late Professor John B. Smith during his connection with Rutgers College. The collection is especially rich in the family of noctuid or owlet moths, where at the latest enumeration

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1,683 species (348 of them types) were represented by 8,930 specimens,—figures which have been since materially increased. In addition there are numerous unarranged and undescribed species and a large series of species in other families. Altogether there are not less than 2,000 species and over 12,000 specimens.

It is fair to estimate the entire college collection of *Lepidoptera* included in the Hulst and Smith collections as exceeding 4,200 species and closely approaching 20,000 specimens. Not more than three or four collections in the United States exceed this in scientific value.

SHORT COURSES IN AGRICULTURE

The agricultural buildings contain a large library and reading room well supplied with the best agricultural books, periodicals, and bulletins. There are classrooms, laboratories, and offices, a stereopticon and facilities for giving illustrated lectures both day and evening. The soil laboratory is fully equipped with experimental apparatus. The dairy laboratories have all the modern dairy apparatus: separators, sterilizers, coolers, refrigerator, churns, butter-workers, bottlers, bottle-washers, boiler and engine, Babcock machines, and all apparatus for testing milk and its products. A room for shop practice is provided with benches, carpentry tools, and pipefitting tools.

The horse stables and dairy barns serve for illustrating methods of building and arranging of stalls and of handling feed and litter. Three silos illustrate the relative value of the large and small silos for the use of a herd of varying size; besides, the daily feeding of the various kinds and ages of animals is a practical illustration of the preparation and use of balanced rations. There are, in addition, models of farm buildings and stalls for dairy cattle.

The cattle owned by the College consist of specimens of the four leading dairy breeds: Holstein, Jersey, Guernsey, and Ayrshire. The breeds of swine include specimens of the Berkshire, Duroc-Jersey, Chester White, Poland China, Large Black, and Yorkshire. Good types of draft, farm, and carriage horses are also available for instruction. Special attention is given to market types. A heated pavilion, 60 feet in diameter, is used for judging and exhibiting the various breeds of live stock.

The equipment for the course in Poultry Husbandry includes a poultry farm of 8 acres, located on the agricultural campus, which is equipped with modern buildings and complete apparatus for extensive

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laboratory operations. On this plant there are 56 pens, containing representatives of 20 breeds of poultry, totaling approximately 1,000 birds. A modern hollow tile incubator cellar has been provided with Mammoth incubators and the testing room is a valuable feature of the equipment. Six types of commercial brooders are available for the use of the students, including an intensive brooder house, with centralized heating plant, 125 feet long.

The Poultry Administration Building, located in the center of this plant, provides large classroom, exhibits, demonstration material and equipment for complete instruction in poultry husbandry. The poultry department also maintains a 23-acre poultry farm about one-half mile from the educational plant. This is open at all times for inspection by students and much is gained by their having an opportunity to keep in touch with the research and commercial operations. The new farm contains 100 laying pens and has a capacity of approximately 3,000 birds.

The equipment for the course in Fruit Growing and Market Gardening includes a range of greenhouses of the latest modern construction, where practical exercises are given in seed testing, seed sowing, transplanting of plants, the propagation of plants, etc. Practical and experimental floriculture is also carried on in these and other greenhouses.

Various types of farm machines, engines, garden implements, seed drills, cultivators, hand weeders, dibbers, etc., are on exhibition during the course.

For the practical exercises in fruit growing the equipment includes fruit trees of the various grades as sold by nurserymen; various types of pruning shears, saws, pruning hooks, hand pruners, budding, grafting, and pruning knives; a collection of fruit packages; hand sprayers, barrel pumps, spray nozzles, hose, rods, and other spraying attachments.

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THE COLLEGE FOR WOMEN

"The New Jersey College for Women" was established by the Trustees of Rutgers College April 12, 1918. The Legislature of New Jersey at its session in 1917 designated the State College, maintained by the Trustees, the State University of New Jersey. Under this title the providing of facilities for the higher education of women seemed appropriate, meeting a long-existing need and widespread desire in New Jersey for such privilege. The College for Women was therefore founded as a department of the State University; it began its work September 18, 1918. It is located on property newly acquired for the purpose, adjacent to the College Farm and one mile distant from the Rutgers College Campus. Its staff of instruction is composed of professors and instructors from Rutgers College and others exclusively serving it.

Two distinct courses of undergraduate instruction are offered in the New Jersey College for Women: the liberal arts course, and the practical arts or home economics course, each of four years' duration. The liberal arts course leads to the A.B., Litt.B., or B.Sc. degree in general science. The practical arts course leads to the degree of B.Sc. The A.B. degree is awarded to all students in the liberal arts course who have offered four years of Latin or three years of Greek for entrance, and have continued the study of Latin or Greek in college, and to those who have offered less than four years of Latin for admission but have taken two or more years of Greek in college. The Litt.B. degree is awarded to all students in the liberal arts course who have taken more than one-half of their elective work in humani-

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ties (language, literature, philosophy, art, history, political science, etc.), not including such students as qualify for the A.B. degree. The B.Sc. degree is awarded to all students, not qualifying for the A.B. or the Litt.B. degree, who have taken more than one-half of their elective work in mathematics and the natural sciences and to students taking the course in practical arts or home economics as prescribed by the State Board of Education in collaboration with the college authorities.

The Library and certain other facilities of Rutgers are available for all the Faculty and students, the department being in effect an affiliated college. Inquiries concerning the College for Women should be addressed to Mrs. Elisabeth N. Greene, Registrar.

Faculty

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Professor of Romance Languages

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Assistant in the Registrar's Office

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AGRICULTURAL EXPERIMENT STATIONS

STATE STATION—ESTABLISHED 1880

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JOHN P. HELYAR, M.S., Seed Analyst
WILLIAM M. REGAN, A.M., Dairy Husbandman
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In Animal Husbandry

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In Publications Department

Ingrid C. Nelson, A.B.

In the Library

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JOHN W. SHIVE, Ph.D., Plant Physiologist

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In Plant Physiology

Linus H. Jones, B.Sc.
Elmer Sargent, B.Sc.

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The New Jersey Agricultural Experiment Station was established by State law in 1880 "for the benefit of practical and scientific agriculture and for the development of our unimproved lands." It was located in connection with the State Agricultural College at New Brunswick, and its management was committed to a Board of Directors consisting of the Governor of the State, the Board of Visitors of the State Agricultural College, and the President and Professor of Agriculture of the College.

The broad spirit of public service that has animated the institution from its inception is well expressed in the words of the first notice, issued April 7, 1880: "The New Jersey Agricultural Experiment Station was established for the purpose of promoting agriculture by scientific investigation and experiment . . . to give information on various subjects of agricultural science for the use and advantage of the citizens of New Jersey. It is the wish of the Board of Direction to make the Station as widely useful as its resources will admit. Every New Jersey citizen who is concerned in agriculture, whether farmer, manufacturer, or dealer, has the right to apply to the Station for any assistance that comes within its province to render, and the Station will respond to all applications as far as lies in its power."

The Agricultural College Experiment Station was founded in 1888 under laws of Congress and of the State, and was placed under the direction of the Trustees of Rutgers College. Its purpose is "to aid in acquiring and diffusing among the people . . . practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science."

The College Station is an organic branch of the State Agricultural College, and the State Station is also closely affiliated with it. Experiments and investigations are con-

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tinually in progress in every department, and many members of the scientific staffs devote their whole time to such work. The results are published in the form of bulletins and annual reports which are sent free to residents of the state who make application for them.

Some of the activities of the Station concern fertilizers and manures, soil fertility and soil biology, the composition of feeding stuffs, milk production, dairy feeding, the breeding of dairy stock, poultry raising, fruit growing, vegetable growing, farm crops, farm management, seed control, floriculture, plant diseases, plant breeding, and the development and selection of plant varieties, oyster propagation, insect pests and insecticides, and mosquito extermination.

In co-operation with the State Geological Survey and the United States Bureau of Soils, a soil survey is now in progress in which the soils of the entire state are being studied and mapped in detail. Apiary inspection and nursery inspection are also carried on in co-operation with the State Department of Agriculture.

EDUCATIONAL WORK

The Experiment Stations conduct an extensive correspondence on agricultural topics, averaging about 100,000 letters a year, besides giving personal advice to numerous visitors and through the personal visits of members of the staff to farms in all parts of the state. The work and methods of the Stations are also shown by exhibits at agricultural fairs and by co-operative and demonstration experiments in various sections of the state.

In order to facilitate and strengthen this work a Department of Agricultural Extension has been organized. It is concerned with all the problems of rural communities, but its primary purpose is to carry to the people of the State the

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results of agricultural research and a knowledge of the best agricultural practice. A corps of specialists has been provided and numerous demonstrations have been conducted in various counties of the state to show the value of fertilizers, the relative productiveness of seed used by farmers in different localities, the control of certain plant diseases, the practical methods of spraying orchards, packing fruit, etc.

In order to meet as fully as possible the numerous inquiries for information along every line of practical agriculture the Extension Department issues a series of circulars on special topics prepared by members of the staff and other specialists. The total number of such circulars at present is over one hundred.

A *Summer Field Meeting* lasting three days is usually held at the College Farm in one of the summer months.

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AGRICULTURAL EXTENSION WORK

DIVISION OF EXTENSION IN AGRICULTURE AND HOME ECONOMICS

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ARTHUR M. HULBERT, State Leader of Boys' and Girls' Club Work
ETHEL JONES, M.A., Assistant State Club Leader
WILLIAM F. KNOWLES, A.B., Assistant State Club Leader
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STANLEY B. ROBERTS, Assistant Specialist, Dairying
CARL R. WOODWARD, A.M., Editor

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ORLEY G. BOWEN, B.Sc., Demonstration Agent for Middlesex County
MRS. CECILIA B. BROGAN, Home Demonstration Agent for Paterson
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JAMES A. STACKHOUSE, B.Sc., Demonstration Agent for Cape May County
W. RAYMOND STONE, Demonstration Agent for Bergen County
EUNICE STRAW, B.Sc., Home Demonstration Agent for Monmouth County
ERNEST H. WAITE, Demonstration Agent for Ocean County
HAROLD E. WETTYEN, B.Sc., Demonstration Agent for Passaic County
CAROLYN F. WETZEL, Home Demonstration Agent for Bergen County
ALBERT E. WILKINSON, M.Agr., Demonstration Agent for Atlantic County

A Department of Agricultural Extension in the New Jersey State Experiment Station was organized December 1, 1912, to carry the results of station research to the people of the State. The State Legislature enacted a law in 1913 providing for farm demonstration, and it makes appropriation for this work. The work of the Department of Agricultural Extension in the Experiment Station was coordinated with that of a Division of Extension in Agriculture and Home Economics in the State College of Agriculture July 1, 1914, the creation of the college division having been made necessary by the terms of the so-called Smith-Lever act of Congress, approved May 8, 1914, which made an appropriation to the State of $10,000 to carry out the provisions of the act.

The purpose of the Smith-Lever act is "to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture and home

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economics, and to encourage the application of the same." It provides for extension work to be inaugurated in connection with the land-grant colleges of the states and to be carried on in co-operation with the United States Department of Agriculture. "That co-operative agricultural extension work shall consist of the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in said colleges in the several communities, and imparting to such persons information on said subjects through field demonstrations, publications, and otherwise; and this work shall be carried on in such other manner as may be mutually agreed upon by the secretary of agriculture and the state agricultural college or colleges receiving the benefits of this act."

"That for the purpose of paying the expenses of said co-operative agricultural extension work and the necessary printing and distributing of information in connection with the same, there is permanently appropriated, out of any money in the treasury not otherwise appropriated, the sum of $480,000 for each year, $10,000 of which shall be paid annually, in the manner hereinafter provided, to each state which shall by action of its legislature assent to the provisions of this act."

The Smith-Lever act further appropriates for the benefit of all the states "an additional sum of $600,000 for the fiscal year following that in which the foregoing appropriation first becomes available and for each year thereafter for seven years a sum exceeding by $500,000 the sum appropriated for each preceding year, and for each year thereafter there is permanently appropriated for each year the sum of $4,100,000 in addition to the sum of $480,000 hereinbefore provided. . . . Such additional sums shall be used only for the purposes hereinbefore stated and shall be allotted annually to each state by the Secretary of Agriculture and paid in

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the manner hereinbefore provided, in the proportion which the rural population of each state bears to the total rural population of all the states as determined by the next preceding federal census; provided further that no payment out of the additional appropriations herein provided shall be made in any year to any state until an equal sum has been appropriated for that year by the legislature of such state or provided by state, county, college, local authority or individual contribution from within the state, for the maintenance of the co-operative agricultural extension work provided for in this act."

The work of the division is carried on by means of specialists and county superintendents of farm demonstration, home demonstration agents, and boys' and girls' club leaders. The specialists assist the county superintendents of farm demonstration in organized counties of the State and carry on demonstration work in other counties upon the request of associations and individual farmers. They respond to requests for addresses as far as practicable and make replies to many thousands of inquiries annually by letter.

The county superintendents of farm demonstration are appointed by the board of managers of the State Experiment Station upon the recommendation of the State Superintendent of Farm Demonstration, and the Director of the Extension Division. A State law enacted in 1913, making provision for farm demonstration, empowers county boards of freeholders to make appropriations for the support of these county superintendents. A State law enacted in 1918 authorizes county boards of freeholders and municipalities to appropriate money to support home demonstration work and boys' and girls' club work, provided this work is done in co-operation with the extension division of the State Agricultural College.

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GENERAL INFORMATION

STUDENT GOVERNMENT

FOR purposes of self-government the whole student body is organized as a Student Assembly with a constitution and by-laws. This assembly chooses annually a Senior Council, which acts as an executive committee of the Assembly, holding regular meetings throughout the year, and proposing to the Assembly appropriate rules for the government of student order and college customs.

Senior Council for 1919-1920

CLIFFORD NELSON BAKER, *Chairman*

PAUL WOOLMAN LUKENS	LELAND LEE TALIAFERRO
CALVIN CHRISTIAN MEURY	PIERRE DUCLOS VAN MATER
CHARLES WALTER RICE	KENNETH CROMWELL HAND

REGISTRATION AND ATTENDANCE

Registration day.—Each year, on the day before college opens, all students must register at the Registrar's office. In 1920 registration day will be Tuesday, September 21. The fee for late registration is $5.

Attendance at exercises.—Students are required to attend morning prayers each week-day, except Saturday, at 12.00 o'clock, and Sunday morning services at 11 o'clock, in the Kirkpatrick Chapel..

1 Excuse for every absence from college duties must be presented to the Registrar.

2 Excuse for anticipated absence must be presented in advance.

3 Excuse for all other absence must be presented before 4 p. m. of the college day following the absence.

4 Each student will be held responsible for work omitted

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on account of absence, but the work will not be made up unless required by the professor concerned.

5 In case an absence is not excused, the student receives O for it.

6 The roll is called in class at five minutes past the hour. Students entering between roll call and twenty minutes past the hour are marked tardy. Students not present at twenty minutes past the hour are marked absent.

7 Tardiness counts as half an absence.

8 The Registrar does not notify students of recorded absence unless he considers it advisable. Each student is advised to examine his absence record frequently.

9 Absences from daily chapel and Sunday service are treated as a class of absences by themselves, and are subject to the following regulations:

(*a*) Students are required to attend daily chapel and chapel Sunday service. In case of absence excuse must be presented to the Registrar at once, and in advance for Sunday service. If more than five unexcused absences from daily chapel occur in any term, suspension follows. If more than two unexcused absences from chapel Sunday service occur in any term, suspension follows.

(*b*) Attendance at daily chapel is recorded and the chapel doors are closed at 12.05 p.m.

(*c*) Attendance at Sunday service is recorded at 11 a. m.

(*d*) Each student must occupy the seat assigned him at daily chapel.

(*e*) Students having standing excuses from daily chapel are required to report at the college office each college day except Saturday between 12.05 and 12.15 p. m.

EXAMINATIONS AND REPORTS

Regular examinations are held twice a year—at the close of each term. Unannounced tests are held at irregular intervals at the discretion of each instructor.

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Students are graded on the scale of 100. A combination of three-fourths of the class mark in any study with one-fourth of the examination grade gives the term grade.

All grades are reported to the Registrar, who designates them by letters according to the following table;

Grade	*Letter*
90 to 100	A
80 to 89	B
70 to 79	C
60 to 69	D

The minimum passing grade is 60.

Below 60 in term grade	E
Below 60 on examination	F
Incomplete term record	G
Absence from examination	H

Grades are reported to students and their parents or guardians by means of these letters only. The student's standing in all studies is made up and reported in this manner at the end of each term.

The minimum passing grade is 60 and any lower standing in either term grade or examination constitutes a deficiency that must be removed by re-examination.

Re-examinations for the removal of deficiencies are held at stated periods, and a student who fails to pass one of these will be given another opportunity by special permission and upon payment of a fee of $5. The second re-examination can be taken only in September.

COLLEGE FEES

The dues of each term must be paid within ten days after the opening of the term.

In addition to the regular fees all breakage and damage to college property will be charged in full.

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Fees for Undergraduate Students

	One Term	*One Year*
Admission or registration fee, payable once	....	$5.00
Tuition fee	$75.00	150.00
Public room service	20.00	40.00
Graduation or diploma fee, payable before senior final examinations	....	7.00

After the freshman year students in the technical courses are required to pay a course fee of $15.00 a term or $30.00 a year.

After the freshman year students in the liberal arts courses are required to pay $7.50 a term or $15.00 a year for each laboratory course elected, but in case a student elects more than two laboratory courses, the total fees charged will not exceed $15.00 a term or $30.00 a year.

Fees for Graduate Students

	One Term	*One Year*
Tuition	$75.00	$150.00
Public room service	20.00	40.00
Laboratory fee	15.00	30.00
(Of the above fees, assistants pay public room service only; research fellows pay public room service and laboratory fee.)		
Diploma fee: Master's degree	....	7.00
Doctor's or Engineer's degree	....	25.00

Remission of Fees

To students holding state scholarships under the act of 1864 (see page 178) $100 of the charge for tuition is remitted, but not the charge for public room service or the special fees enumerated in the preceding list.

To students holding state scholarships under the act of 1890 as amended by the act of 1905 (see page 178), the charges for tuition and also those for public room service and all special fees are remitted.

BOARD AND ROOMS

During the present year board is furnished at Winants Hall at $6.50 a week. Accommodations can be found elsewhere at about the same rates, but the Faculty is empowered to pass such regulations rela-

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tive to the number of boarders in each house as they may think proper, and students are permitted to board only at such places as are approved by the Faculty.

The weekly rental of rooms in Winants Hall is $1 to $1.50, in the John Howard Ford Dormitory $2 to $2.75, for each occupant. One student occupying a double room or two students occupying rooms intended for three will be charged the full rental for the room or the suite. Detailed schedules of the rates may be obtained from the Registrar.

Rooms are taken for the full year of 40 weeks, and rent is payable in advance, one-half at the beginning of each term. Agreement to pay rent for the entire suite must be signed by the student who draws it, or his guardian. Rooms may be occupied from the Monday preceding the opening of the college year to the Saturday following commencement.

In drawing for choice of rooms the order of classes will be followed, precedence being given to seniors. The drawing for the year 1920–1921 will take place in the Registrar's office on Tuesday, May 25, 1920, at 4 p. m.

Winants Hall

This building, erected in 1890, accommodates 90 students. It is heated by steam and lighted by gas. Bathrooms, lavatories, and storerooms are on each floor. Ample provision is made of fire escapes and other securities against accidents.

The rooms are arranged in suites of three, a study and two sleeping rooms, for two or three students; there are also a few single rooms. The large study rooms are each furnished with two study tables and two chairs. The bedrooms are each furnished with bedstead (with springs and mattress), bureau, and washstand. Sheets, pillows, pillowcases, coverlets, towels, bowl and pitcher, etc., are to be supplied by the occupant.

John Howard Ford Dormitory

Completed and first occupied in 1915, this dormitory provides accommodation for 80 students. It is a fireproof building, heated by steam, and lighted by electricity.

It is divided into five houses with distinct main entrances and connected only through the basement. Bathrooms and lavatories are in the basement and on the top floor of each house.

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There are a few single rooms, and many suites of rooms with study and one bedroom or study and two bedrooms and with large closets. Each study is handsomely furnished with table or two tables, bookcase and chairs, and each bedroom is furnished with bed, springs, mattress and pillow, bureau and chair. Students must provide sheets, pillowcases, coverlets, and towels.

Peter Hertzog Hall

Such rooms in Peter Hertzog Hall as are not required by students n the Theological Seminary may be rented by students of the college.

ESTIMATE OF EXPENSES

	One Year
Fees, exclusive of admission and graduation fees	$190 to $220
Board, 36 weeks at $6.00 to $7.00 a week	216 to 252
Room rent, $1.00 to $2.75 a week (40 weeks)	40 to 110
Total	$446 to $582
For scholarships remitting part tuition deduct	100 100
Total	$346 to $482
For scholarships remitting all fees deduct further	90 to 120
Total	$256 to $362

ADDITIONAL EXPENSES

The preceding estimate does not include books, clothes, laundry, traveling expenses, etc., as these depend upon the individual circumstances. Student members of the Athletic Association pay annual dues of $10, in two instalments, $5 at the beginning of each term.

Students in the technical science courses are required to procure sets of drawing instruments costing from $7 to $15. They are advised to defer the purchase of these instruments until entering college, as they will then have the advantage of procuring them under the direction of the Professor of Graphics.

Students in the department of Agriculture make a deposit of $5 at the beginning of the course in soils, second term, freshman year, to cover breakage or damage to laboratory equipment; any unused balance is refunded. A deposit of $5 is similarly required for the course in agronomy, first term, sophomore year.

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Deposits of varying amount, to cover the cost of breakage and materials, are required in certain laboratory courses in science. Unused portions of such fees are returned.

Students pursuing the course in chemistry and the course in electrical engineering are expected to provide themselves, at their own expense, with the necessary sets and pieces of apparatus, which may be obtained from the regular dealers or from the department. Apparatus obtained from the department may be returned at the end of the year, if in good condition, at a discount of about ten per cent from the original cost.

Students taking military science, except members of the "Reserve Officers' Training Corps," are required to purchase a uniform consisting of cap, blouse, and trousers of olive drab cloth and costing about $25. The suit is neat and serviceable, and while required to be worn only at drills, may be worn on any occasion.

EXPENSES OF SHORT COURSES IN AGRICULTURE

Tuition in these courses is free to residents of New Jersey; non-residents pay a tuition fee of $25 on entering. There is also a registration fee of $5 for all. The principal items of expense are the cost of living in New Brunswick and of travel to and from the city. Comfortable rooms with table board can be obtained within ten to fifteen minutes' walk of the main agricultural building for $10.00 a week. Trips of inspection to nearby farms may cost $5 to $6 for the term. The cost of books is approximately $15. The total expense of the course is about $175. The required entrance fee is to be paid when the application is accepted, or it may be sent with the application, as the numbers must be limited because of lack of room.

EXPENSES OF THE SUMMER SESSION

Residents of New Jersey do not pay tuition. Every student, however, is required to pay a registration fee. Small fees are charged also in connection with certain courses. Students may take home articles made in the various classes by paying the cost of materials used. Residents of other states must pay tuition besides the above fees.

The dormitories, college dining hall, and many private residences are open to the summer students. Single rooms cost $1.50 to $3.00 and double rooms $1.25 to $3.00 a week for each occupant. Board is $6.00 to $7.50 a week. The Summer Session Announcement, published March 1, will be sent on request.

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AFFILIATED SOCIETIES

Advanced work in various departments of the college is actively sustained through the several societies which meet under the patronage of the professors and instructors together with alumni and other residents of New Brunswick interested in special branches of learning. Such societies, some of them of many years' existence and all of them meeting at least monthly, are the Historical Society, the Scientific Society, the Graduate Students Club, the Phi Beta Kappa Society, the Greek Club, the Alliance Française.

STUDENT ORGANIZATIONS

The Young Men's Christian Association holds a weekly religious meeting for all students, maintains Bible classes, sends deputations to outlying churches and boys' clubs, engages in social service in the community, and otherwise promotes active religious work under the direction of an experienced executive secretary. It also conducts a student employment bureau.

The Targum Association issues the weekly paper, which is edited and managed by the students and has been successfully maintained since 1869.

A committee of the students co-operating with a committee of the Faculty arranges each year a program of intercollegiate debates.

The Philoclean Literary Society meets biweekly, with programs of literary criticism, discussion, and debate.

Queen's Players, the undergraduate dramatic association, presents one or more plays during the college year.

Technical clubs composed of students in the departments of civil engineering, electrical and mechanical engineering, chemistry, biology, and agriculture meet regularly for the presentation and discussion of papers.

A glee club, which has been in continuous existence for

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more than twenty-five years, a mandolin club, and other musical organizations are maintained by the students.

Eleven Greek letter societies (the first established here in 1845) and one students' club occupy houses which serve in large measure as dwelling houses for their members.

ATHLETICS

In order to secure for the students the benefits of outdoor exercise, athletic sports are encouraged by the provision of adequate facilities. Rightly controlled such sports have shown themselves beneficial both to the health of the students and to the quality of the work done and are manifestly in the interest of good order.

Each student is required before enrolment by the manager of an athletic team or organization or before entering his name for match contests to obtain from the College Physician a certificate, good for the current college year only, stating that the candidate is physically fit for such contests.

Athletic sports are under control of an incorporated Athletic Association governed by a board of nine trustees and supported by the membership dues of the students.

Details in the conduct of athletics are in charge of a Graduate Manager of Athletics and of a Board of Managers which meets once a month during the college year. This board is composed of a representative of the Faculty, three alumni, three undergraduates, together with the president and treasurer of the Association, the chairman of the Board of Trustees of the Athletic Association, and, *ex officio*, the Physical Director of the College. In this way a cordial co-operation has been steadily maintained between Faculty and students, thus minimizing the need for the exercise of direct authority.

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RUTGERS COLLEGE CADET CORPS

1919-1920

Commandant

Lieutenant-Colonel Walter S. Greacen, *U. S. Infantry*

Assistants

First Sergeant W. P White, *U. S. Infantry*
Sergeant C. F. Siebert, *U. S. Infantry*
Sergeant R. S. Krasowski, *U. S. Infantry*

Company Rosters, 1919

Company A

Captain P. D. Van Mater
First Lieutenant L. D. Fouquet
Second Lieutenant J. C. Oxley
Second Lieutenant F. H. Waitz
Second Lieutenant A. D. Crooks
First Sergeant H. M. Spooner
Sergeant V. I. Cruser
Sergeant A. W. Duryee
Sergeant A. E. Hilliard
Corporal C. W. Harkins
Corporal E. G. Craig
Corporal B. R. Jacobs
Corporal H. T. Redmond
Corporal W. R. Devaul
Corporal G. E. Lamb
Corporal H. L. Mason
Corporal N. R. Mehrhof
Corporal L. H. Smith

Company B

Captain P. M. Moore
First Lieutenant M. H. Sherwin
Second Lieutenant C. Metz
Second Lieutenant G. S. Voorhees
Second Lieutenant H. S. Read
First Sergeant F. H. Coker
Sergeant D. G. Mullison
Sergeant V. C. Franke
Sergeant L. E. Gaige
Sergeant W. L. Schoonmaker
Sergeant J. M. Summerill
Corporal R. Brandt
Corporal C. E. Kulp
Corporal M. J. Redmond
Corporal W. H. Gardner
Corporal F. D. Kull
Corporal J. L. Miller
Corporal J. M. Tegen
Corporal G. J. Van Derveer
Corporal S. H. Wills

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Company C

Captain G. A. Mead
First Lieutenant E. W. Barbehenn
Second Lieutenant A. F. Eschenfelder
Second Lieutenant H. E. Morgan
Second Lieutenant W. E. Mutch
First Sergeant George M. Brien
Sergeant A. A. Burkhardt
Sergeant A. F. Haelig
Sergeant A. M. Hill
Sergeant P. S. Van Orden
Sergeant L. J. Whitehead
Corporal D. C. McCully
Corporal E. T. Davis
Corporal L. Steiner
Corporal G. Zust
Corporal R. E. Crane
Corporal W. L. Hanaway
Corporal A. L. Massey
Corporal W. Ruck

Company D

Captain J. J. Curran
First Lieutenant A. R. Dayton
Second Lieutenant H. M. Froehlich
Second Lieutenant F. S. Allmuth
Second Lieutenant E. B. Cook
First Sergeant W. A. Willard
Sergeant R. B. Stone
Sergeant H. M. Augustine
Sergeant S. B. Reed
Sergeant J. R. Van Winkle
Corporal J. B. Crowell
Corporal C. Messerschmitt
Corporal R. P. Van Orden
Corporal W. C. Perry
Corporal D. Hall
Corporal G. I. Johnson

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DEGREES CONFERRED June 10, 1919

HONORARY DEGREES

Doctor of Laws

David Franklin Houston	*Washington, D. C.*
Robert Clarence Pruyn	*Albany, N. Y.*
Alan Hartwell Strong	*Philadelphia, Pa.*

Doctor of Divinity

Samuel Marius Zwemer	*New York, N. Y.*

Doctor of Letters

Edward D. Dimnent	*Holland, Mich.*

Doctor of Science

Louis Faugeres Bishop	*New York, N. Y.*
Walter Aikman Sherwood	*Brooklyn, N. Y.*
Frank Robertson Van Horn	*Cleveland, Ohio*

Doctor of Music

Arthur D. Woodruff	*New York, N. Y.*

Master of Science

William Weigel	*New Brunswick*

GRADUATE DEGREES

Master of Science

Walter Herman Beisler
B.Sc., Rutgers College, 1918

George Bodo Otto
B.Sc., Rutgers College, 1918

Allen George Waller
B.Sc., Rutgers College, 1915

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Master of Arts

ROYAL FRANKLIN NICHOLS
A.B., Rutgers College, 1918

CARL RAYMOND WOODWARD
B.Sc., Rutgers College, 1914

Civil Engineer

CUTHBERT WEAD HAASIS
B.Sc., Rutgers College, 1913

DEAN CARTER JENKINS
B.Sc., Rutgers College, 1916

Mechanical Engineer

VINTON DOUGLAS TOMPKINS
B.Sc., Rutgers College, 1907

Sanitary Engineer

GEORGE ANDREWS MITCHELL
B. Sc., Rutgers College, 1891
M.Sc., Rutgers College, 1892

DEGREES CONFERRED IN COURSE

Bachelor of Arts

ROY ELMER ANDERSON
JOHN WILLSON ARMSTRONG, JR.
HENRY CASPER BERG
ANTHONY EDWARD CASALE
CONO CORNELIUS CASALE
ELMER HORTON FRENCH
MICHAEL HAROLD HIGGINS
GEORGE ADRIAN KUYPER
FRANCIS EDWARD LYONS
HAROLD STANLEY MCWITHEY
ALFRED AUGUST NEUSCHAEFER
MALCOLM SLACK PITT
PAUL LEROY ROBESON
PIERRE VAN DYCK

Bachelor of Letters

CHESTER EARL BREECE
SAMUEL ENGLE BURR, 2D
THEODORE HAMPSON FOLEY
ABRAHAM GOLDEN
ENOS FRASIER JONES
HENRY READ PERKINS
SHELDON ELLIOTT WARD
EDWARD DAVID WARENREICH

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Bachelor of Science

Dwight Millen Babbitt
Harry Everard Barbehenn
Charles Henry Young Bellerjeau
Horace Patterson Billings
Everett Barkelew Bleecker
Harry Bloom
Joseph Breckley
Charles Briwa
William Franklin Buchanan
Frederick William Bullwinkel
Albert Daniel Cheston
Frank LaFetra Clayton
Frank Van Deventer Cortelyou
Harry Lisle Denberg
William Alfred Feitner
Morris Goldfarb
David Goldstein
Earl Stretch Harris
Harold Charles Heilmann
Charles Henry Hollenbeck
William Kirby Holmes, Jr.
Hanford Farmer Lefurgy
Julian Milton Lyon
Frank Lamont MacWatty
Brooks Collins Martin
Titus Bonner Maxwell
Perry Martin Moore
Harold Edward Morgan
George Stirling Otis
Edward Davies Perry
Carl William Pfeil, Jr.
George Hargis Prall
Austin Melville Rice
Henry Walcott Rogers
William Seltzer
Raymond J. T. Swing
Charles Sykes
Edwin Buckley Thompson
Franklin Slater Thompson
Harvey John Tiger
Jerome Stephenson Underhill
Walter Cobson Weller
Louis Ferdinand Wetterberg
Edgar La Verne Whiting
William Graham Whitney
Cyril Wimpenny
Malcolm Russell Young

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HONORS CONFERRED June 10, 1919

GRADUATION HONORS

Highest Honors

GEORGE ADRIAN KUYPER

High Honors

CONO CORNELIUS CASALE
PIERRE VAN DYCK
SHELDON ELLIOTT WARD

Honors

JOHN WILLSON ARMSTRONG, JR.
JOSEPH BRECKLEY
EVERETT BARKELEW BLEECKER
FREDERICK WILLIAM BULLWINKEL
ANTHONY EDWARD CASALE
FRANK VAN DEVENTER CORTELYOU
EARL STRETCH HARRIS
TITUS BONNER MAXWELL
PERRY MARTIN MOORE
GEORGE HARGIS PRALL
PAUL LEROY ROBESON
WILLIAM SELTZER
EDWARD DAVID WARENREICH
WALTER COBSON WELLER
LOUIS FERDINAND WETTERBERG

Special Honors

In Agriculture.....WILLIAM SELTZER
In Electrical Engineering.....EDWIN BUCKLEY THOMPSON
In English.....GEORGE ADRIAN KUYPER
In German.....EDWARD DAVID WARENREICH
In Mathematics.....PIERRE VAN DYCK
In Mechanical Engineering.....GEORGE HARGIS PRALL
In Philosophy.....GEORGE ADRIAN KUYPER
In Physiology.....FREDERICK WILLIAM BULLWINKEL
In Physiology.....LOUIS FERDINAND WETTERBERG
In Political Science.....SHELDON ELLIOTT WARD

Commencement Speakers

JOHN WILLSON ARMSTRONG, JR.
GEORGE ADRIAN KUYPER
PAUL LEROY ROBESON

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Honors in Military Department

The "Best Soldier," whose name is engraved on a bronze tablet in the Ballantine Gymnasium:

PERRY MARTIN MOORE

The following cadets were reported to the Adjutant General, United States Army, and to the Adjutant Generals of their respective states as having shown special aptitude for military service:

Cadet Major and former Second Lieutenant, U. S. A., ELMER HORTON FRENCH

Cadet Captain PERRY MARTIN MOORE

Cadet Captain and former Second Lieutenant, U. S. A., ABRAHAM GOLDEN

Cadet Captain and Second Lieutenant Reserve Corps HENRY CASPER BERG

Phi Beta Kappa

Class of 1919

JOHN WILLSON ARMSTRONG, JR.
ANTHONY EDWARD CASALE
CONO CORNELIUS CASALE
GEORGE ADRIAN KUYPER
PERRY MARTIN MOORE
GEORGE HARGIS PRALL
PAUL LEROY ROBESON
WILLIAM SELTZER
SHELDON ELLIOTT WARD
EDWARD DAVID WARENREICH
PIERRE VAN DYCK

UNDERGRADUATE HONORS

Junior Orators

Class of 1920

EMANUEL BREITKOPF
ROBERT RITTER DAVENPORT
ARTHUR RUNYON DAYTON
ERIC FLEMING
MEFFORD ROSS RUNYON
LEONARD AUGUSTUS SIBLEY
ANSON WILLARD VOORHEES
FOSTER MAHLON VOORHEES

Sophomore Orators

Class of 1921

HAROLD MANDEVILLE AUGUSTINE
JOSEPH AVERY DUNN
SAMUEL DAVID HOFFMAN
JASON SEABURY PETTENGILL
AARON ROTH

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Honor Men

Class of 1920

L = Liberal Course S = Technical Course

John Charles Aydelott, Jr.	S	Pekin (Ill.) High School
Emanuel Breitkopf	S	New Brunswick High School
Archer Duryee Crooks	S	Freehold High School
James Joseph Curran	S	New Brunswick High School
Myron Raymond Dean	S	Belvidere High School
Harry David Feinberg	S	Chattle High School
Kenneth Cromwell Hand	L	Keyport High School
Loring Ross Lecraw	L	White Plains High School
William Eagleson Mutch	S	Nutley High School
Charles Walter Rice	L	Passaic High School
Mefford Ross Runyon	S	New Brunswick High School
Benjamin Howard Schlain	S	South Side High School
Leonard August Sibley	L	Passaic High School
Dharma Rajah Daniel Souri	L	Voorhees College (India)

Class of 1921

John J. Albert	S	South Side High School
Cyrus Van Dolah Bissey	L	Lambertville High School
John Francis Campbell	S	Belleville High School
Ernest Victor Close	S	Westfield High School
John Beverly Crowell	L	East Orange High School
Stuart Taylor Danforth	S	New Brunswick High School
Edmund Tomlinson Davis, 2d	S	Montclair High School
Willard Rogers Devaul	S	Trenton High School
Abram Wilbur Duryee	L	Dickinson High School
Walter Ernest Fleming	S	West Orange High School
Howard McCrea Goldy	L	Pemberton High School
Arthur Eugene Hilliard	S	Cliffside Park High School
Benjamin Ralph Jacobs	L	Plainfield High School
Henry Lea Mason	S	Trenton High School
Norman Ripley Mehrhof	S	Washington High School
Harris Solman	S	Trenton High School
Robert Block Stone	S	New Brunswick High School
Donald Van Brakle	L	Keyport High School
John Rigby Gill Van Winkle	S	Rutherford High School

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Class of 1922

William Robertson Angus, Jr,	S	Passaic High School
Donald Van Court Birrell	S	East Side High School
Theodore Brinckerhoff	L	Beacon High School
William Edgar Callison	S	Bound Brook High School
Allen Byron Clayton	S	Winthrop High School
Charles Clarence Cook	S	Burlington High School
Frank Della Volpe	S	Dickinson High School
Charles Thomas Dieffenbach	S	Dickinson High School
William Wootton Dill	S	Atlantic City High School
James Lynnewood Dixon	S	Haddonfield High School
Isadore Eisenman	S	Bound Brook High School
George Francis Harrington	S	Freehold High School
Joseph Harold Vincent Kelly	S	Atlantic Highlands High School
Joseph Benedict Kenny	L	Hoboken High School
Lewis Charles Kuhl, Jr.	S	Atlantic City High School
Churchill Pierce Lathrop	S	Montclair High School
Burton Cook Meyer	S	Bushwick High School
Robert Edward Simon	S	New Brunswick High School
John Ray Taylor	S	New Brunswick High School
Raymond Elwood Van Buskirk	S	Montclair High School

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PRIZES AWARDED, 1918-19

SENIOR PRIZES

James Suydam Prize in English Composition
GEORGE ADRIAN KUYPER

James Suydam Prize in Natural Science
PERRY MARTIN MOORE

Joseph P. Bradley Prize in Mathematics
PIERRE VAN DYCK

Ann Van Nest Bussing Prizes in Extempore Speaking
First PAUL LEROY ROBESON
Second ROY ELMER ANDERSON

Monsignor O'Grady Prizes in Extempore Speaking
First PAUL LEROY ROBESON
Second ROY ELMER ANDERSON

Class of 1876 Prize in Political Science
SAMUEL ENGLE BURR, 2D

Theodore Frelinghuysen Vail Prize for Scholarship
GEORGE ADRIAN KUYPER

Gillett Wynkoop Prize in Chemistry
PERRY MARTIN MOORE

SENIOR AND JUNIOR PRIZES

Municipal Management Prize
CONO CORNELIUS CASALE

Daughters of the War of 1812 Prize for American History
SHELDON ELLIOTT WARD

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JUNIOR PRIZES

Irving S. Upson Prizes in Oratory

First ARTHUR RUNYON DAYTON
Second EMANUEL BREITKOPF

SOPHOMORE PRIZES

Myron W. Smith Memorial Prizes in Oratory

First SAMUEL DAVID HOFFMAN
Second AARON ROTH

FRESHMAN PRIZES

Tunis Quick Prize in English Grammar and Spelling

EDWARD FRANK O'DAIR

Edward Livingston Barbour Prizes in Declamation

First HAROLD WILLIAM RAY
Second GEORGE WHITFIELD CONOVER

GENERAL PRIZE

Alliance française Prize in French

EDWARD DAVID WARENREICH

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REGISTER OF STUDENTS

GRADUATE STUDENTS

Bloom, Harry *Hackensack* 83 Commercial Ave.
B.Sc., Rutgers College, 1919
Agriculture

DuBois, Anson Mapes *Newburgh, N. Y.* 16 Hertzog Hal
Litt.B., Rutgers College, 1918
History

Fiske, Jessie Gladys *Brookfield, Vt.* 142 Welton St
Ph.B , University of Vermont, 1917
Research Assistant in Plant Physiology

Haenseler, Conrad Martin *East Chattanooga, Tenn.* College Farm
B.S., University of Tennessee, 1914
M.S., University of Tennessee, 1916
Plant Pathology

Holmes, William Kirby *Merchantville* 18 College Ave.
B.Sc., Rutgers College, 1919
Vander Poel Fellow in Chemistry

Joffe, Jacob Samuel *New Brunswick* College Farm
B.Sc., Rutgers College, 1918
Assistant in Microbiology of Soils

Jones, Linus Hale *Milford, Mass.* Y. M. C. A.
B.S., Massachusetts Agricultural College, 1916
M.S., Massachusetts Agricultural College, 1919
Ammonium Sulphate Research Fellow

Lefurgy, Hanford Farmer *Yonkers, N. Y.* 245 Ford Hall
B.Sc., Rutgers College, 1919
Vander Poel Fellow in Chemistry

Macpherson, Gertrude Elizabeth *Brooklyn, N. Y.* 215 Cleveland Ave.
A.B., Adelphi College, 1918
Research Assistant in Plant Pathology

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Maxwell, Titus Bonner *Seacliff, L. I., N. Y.* 340 Ford Hall
B.Sc., Rutgers College, 1919
Vander Poel Fellow in Chemistry

Meuser, Ludwig *Bound Brook* Bound Brook
B.Sc., Rutgers College, 1918
Research Assistant in Chemistry

Neller, Joseph Robert *Austin, Minn.* College Farm
B.S., Macalaster College, 1913
M.A., University of Minnesota, 1916
Research Fellow in Soil Biology

Patz, Gustav *Newark* Rutgers College Library
A.B., Rutgers College, 1917
Germanics

Poole, Robert Frank *Gray Court, S. C.* College Farm
B.S., Clemson College, 1916
M.Sc., Rutgers College, 1917
Research Assistant in Plant Pathology

Rudolfs, William *Wageningen, Holland* 83 Commercial Ave.
Graduate in Agriculture, Wageningen School of Agriculture, 1911
International Salt Company Research Fellow

Sargent, Elmer Lawrence *Fort Collins, Col.* 35 Mitchell Ave.
B.S., Colorado Agricultural College, 1917
Research Assistant in Plant Physiology

Thomson, James Wallace *New Kingston, N. Y.* Ford Hall
B.Sc., Rutgers College, 1917
Research Assistant in Entomology

Van Alstine, Ernest *Urbana, Ill.* College Farm
B.S., Michigan Agricultural College, 1907
M.S., University of Illinois, 1916
Sodium Nitrate Research Fellow

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SENIOR CLASS

Class of 1920

A = Agricultural course
B = Biological course
C = Civil Engineering course
D = Chemistry course
E = Electrical Engineering course
L = Liberal course
M = Mechanical Engineering course

Allmuth, Frank Stirling	B	*Paterson*	74 College Ave.
Angus, Bruce Walker	A	*Passaic*	41 College Ave.
Aydelott, John Charles, Jr.	E	*Pekin, Ill.*	Bleecker Place
Baird, Karl Oliver	A	*Freehold*	95 College Ave.
Baker, Clifford Nelson	L	*Salem*	542 George St.
Balikjian, Daniel	E	*Tennent*	Tennent
Barbehenn, Edwin William	C	*Jersey City*	126 College Ave.
Boocock, Cornelius Brett	L	*Buffalo, N. Y.*	77 Hamilton St.
Breitkopf, Emanuel	D	*New Brunswick*	35 Albany St.
Buttler, Irving Ditmars	M	*New Brunswick*	256 Handy St.
Casey, Edward Leo	L	*Bridgeport, Conn.*	41 College Ave.
Chen, Hsi Yuan	L	*Amoy, China*	33 Hertzog Hall
Conover, Earle Van Arsdale	L	*Asbury Park*	114 College Ave.
Crooks, Duryee Archer	L	*Greenwich, Conn.*	142 Winants Hall
Curran, James Joseph	L	*New Brunswick*	250 Delevan St.
Dahl, Norman Fredrik	D	*Bloomfield*	542 George St.
Davenport, Robert Ritter	L	*Orange*	29 Winants Hall
Dayton, Arthur Runyon	L	*Plainfield*	Bleecker Place
Dean, Myron Raymond	A	*Delaware*	342 Ford Hall
DeWitt, John Willard	A	*Oradell*	Bleecker Place
Dulany, Franklin Reed	A	*Merchantville*	Bleecker Place
Dumont, William Henry	L	*Coxsackie, N. Y.*	114 College Ave.
Eisenberg, Herman Elkan	L	*Rahway*	Rahway
Eschenfelder, Andrew Frank	C	*Newark*	63 Winants Hall
Feinberg, Harry David	D	*Long Branch*	150 Somerset St.
Fleming, Eric	C	*New Brunswick*	209 Townsend St.
Flitman, Charles Herbert	A	*Newark*	310 George St.
Fouquet, Louis Douglas, Jr.	L	*Fishkill, N. Y.*	123 Ford Hall
Froehlich, Harold Max	L	*Newark*	41 Church St.
Grimme, August Louis	L	*Irvington*	74 College Ave.
Hand, Kenneth Cromwell	L	*Keyport*	502 George St.
Haupt, Joseph Jacob, Jr.	A	*Montclair*	78 College Ave.
Herben, Stephen Joseph	L	*New York, N. Y.*	77 Hamilton St.
Hickman, Cedric Ashley	L	*Asbury Park*	18 College Ave.
Hock, August William	L	*Newark*	95 College Ave.

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Houlihan, James Willard Christopher	E	*Long Branch*	63 Winants Hall
Howard, Joseph Adolf	D	*New Brunswick*	R. D. No. 4
Hults, Willard Lunger	D	*Perth Amboy*	95 College Ave.
Illig, Rudolph Frederick, Jr.	A	*New Brunswick*	10 Lufbery Ave.
Jackson, Frederick Walter	A	*Summit*	250 Hobart Ave.
Jackson, James Draper	A	*Cape Charles, Va.*	502 George St.
Jankelson, Jacob	B	*Newark*	Newark
Johnston, John Harold	D	*Ridgewood*	126 College Ave.
Kelly, David	L	*New Brunswick*	696 George St.
Kleinhans, Rufus Edgar	D	*Perth Amboy*	Perth Amboy
Leber, Morton Adelbert	C	*Woodbridge*	41 College Ave.
Lecraw, Loring Ross	L	*Plainfield*	443 Ford Hall
Letson, Walter Colburn	L	*Stelton*	77 Hamilton St.
Losee, James Knickerbocker	L	*Upper Red Hook, N. Y.*	77 Hamilton St.
Lukens, Paul Woolman	A	*Rahway*	126 College Ave.
McWhood, Morton Kemlo	D	*Newark*	26 Winants Hall
Mead, George Adriance	C	*Upper Montclair*	Bleecker Place
Metz, Charles, Jr.	C	*New Brunswick*	11 N. Fifth Ave.
Meury, Calvin Christian	L	*Jersey City*	37 Hertzog Hall
Miner, Ross Huylmunn	L	*South Orange*	125 Ford Hall
Mutch, William Eagleson	E	*Nutley*	431 Ford Hall
Neely, Harold Marsland	A	*Brooklyn, N. Y.*	126 College Ave.
Oxley, Joseph Charles	C	*Long Branch*	41 College Ave.
Packard, William Nelson	L	*Upper Montclair*	18 College Ave.
Perry, George Herbert	D	*Ocean Grove*	126 College Ave.
Perry, John Richard	A	*Fair Haven*	172 College Ave.
Plain, Frank Abraham	A	*Perth Amboy*	111 Ford Hall
Rice, Charles Walter	L	*Passaic*	74 College Ave.
Riker, John Romine, Jr.	C	*Morris Plains*	688 George St.
Rubin, Michael Frankel	A	*East Orange*	314 Ford Hall
Rue, Wilbur Fowler	A	*Allentown*	582 George St.
Ruedemann, Dana Weiner	A	*Albany, N. Y.*	214 Ford Hall
Runyon, Mefford Ross	D	*New Brunswick*	254 Lawrence Ave.
Saxe, Amos Howard	A	*Catskill, N. Y.*	41 College Ave.
Schlain, Benjamin Howard	D	*Newark*	101 S. Fourth Ave.
Schoonmaker, Ellis Harold	L	*Hasbrouck Heights*	Bleecker Place
Sibley, Leonard Augustus	L	*Atlanta, Ga.*	14 Hertzog Hall
Souri, Dharma Rajah	L	*Madanapalli, India*	26 Hertzog Hall

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Spader, William Van Mater	L	*New Brunswick*	107 First Ave.
Stahl, Robert Henry	L	*Irvington*	144 Winants Hall
Taliaferro, Leland Lee	L	*Atlantic City*	74 College Ave.
Talmage, George Edwin, Jr.	L	*Oyster Bay, N. Y.*	114 College Ave.
Taylor, Harold Cuyler	L	*East Orange*	77 Hamilton St.
Thomas, Howard Haines	M	*Moorestown*	18 College Ave.
Trimnell, Marmion Robert	A	*Newfield*	502 George St.
Van Arsdale, John Royle	L	*Hawthorne*	Bleecker Place
Van Fleet, Arthur Kenney	E	*Somerville*	38 College Ave.
Van Mater, Pierre Duclos	A	*Plainfield*	77 Hamilton St.
Voorhees, Foster Mahlon	L	*Trenton*	542 George St.
Vose, Richard Shepard	D	*Spencer, N. Y.*	78 College Ave.
Vose, Rodney Seager	A	*Spencer, N. Y.*	78 College Ave.
Waitz, Frederick Henry	M	*Elizabeth*	41 College Ave.
Ward, Anton	L	*Hackensack*	74 College Ave.
Waterfield, John Roland	L	*Irvington*	74 College Ave.
Weisel, James Conrad	A	*Ridgewood*	66 Winants Hall
*Wilcox, Howard Spencer	A	*Jersey City*	41 College Ave.

JUNIOR CLASS

Class of 1921

A = Agricultural course
B = Biological course
C = Civil Engineering course
D = Chemistry course
E = Electrical Engineering course
L = Liberal course
M = Mechanical Engineering course

Aspinall, Henry Vernon	M	*Firthcliffe, N. Y.*	38 College Ave.
Augustine, Harold Mandeville	L	*Hackensack*	331 Ford Hall
Backus, William Henry	L	*Teaneck*	47 Hertzog Hall
Bissey, Cyrus Van Dolah	L	*Rosemont*	143 Ford Hall
Brandt, Randolph, Jr.	L	*Upper Montclair*	18 College Ave.
Briegs, Harold Raymond	L	*Perth Amboy*	126 College Ave.
Brown, Clarence	D	*Port Republic*	38 College Ave.
Burhans, Edmund Utter	L	*Saugerties, N. Y.*	542 George St.
Burkhardt, Andrew Alois	L	*Newark*	39 Hertzog Hall
Campbell, Duncan	A	*Skillman*	143 Winants Hall
Campbell, Herbert Ryerson, Jr.	C	*Paterson*	126 College Ave.
Campbell, John Francis	A	*Belleville*	43 Winants Hall
Christie, Francis Johnston	M	*Bloomfield*	542 George St.
Clark, Ernest Alexander, Jr.	L	*Hackensack*	12 Hertzog Hall

*Died October 25, 1919.

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Clickner, Forest Henry Theodore	A	*New Brunswick*	83 Commercial Ave.
Close, Ernest Victor	L	*Lawrenceville, Pa.*	401 S. Second Ave.
Conger, Henry Clay, 3d	C	*Orange*	Bleecker Place
Cook, Ellis Beveridge	L	*Troy, N. Y.*	77 Hamilton St.
Costa, Joseph Louis	D	*Fair Haven*	311 Ford Hall
Craig, Emmett Girard	C	*Newark*	74 College Ave.
Crane, Robert Edward	A	*Montclair*	Bleecker Place
Cronk, Elwood Bertram	L	*New Brunswick*	50 Hassart St.
Crowell, John Beverly	L	*East Orange*	Bleecker Place
Cruser, Victor Irving	M	*Atlantic Highlands*	542 George St.
Danforth, Stuart Taylor	B	*New Brunswick*	115 N. Sixth Ave.
Darwent, Warren John Joseph	M	*Cranford*	43 Winants Hall
Davies, Malcolm Frick	L	*Brooklyn, N. Y.*	81 Winants Hall
Davis, Edmund Tomlinson	L	*Upper Montclair*	18 College Ave.
Devaul, Willard Rogers	C	*Trenton*	61 Winants Hall
DeVries, John Louis	D	*Nutley*	95 College Ave.
Dickinson, Abram Becker	D	*Ridgewood*	502 George St.
Doehlert, Charles Alfred	A	*Rutherford*	231 Ford Hall
Dunham, Richard White	L	*New Brunswick*	215 First Ave.
Dunn, Joseph Avery	D	*East Orange*	121 Ford Hall
Duryee, Abram Wilbur	B	*Jersey City*	542 George St.
Eisenberg, Solomon	L	*Rahway*	Rahway
Farley, Colvin	L	*White Plains, N. Y.*	77 Hamilton St.
Fleming, Walter Ernest	A	*West Orange*	41 College Ave.
Fox, Vernon Cartwright	D	*Metuchen*	Metuchen
Franklin, Churchill Charles	L	*Helmetta*	502 George St.
Fritzinger, John George	M	*Perth Amboy*	95 College Ave.
Gaige, Lisle Edward	E	*Belmar*	321 Ford Hall
Gardner, William Herbert	L	*Newark*	74 College Ave.
Garrett, Alfred Tennyson	A	*Collegeville, Pa.*	74 College Ave.
Gaub, William Henry, Jr.	B	*New Brunswick*	134 Easton Ave.
Gibson, James Percival	D	*New Brunswick*	55 Richardson St.
Gidley, Irving Youlen	L	*South Bound Brook*	502 George St.
Goldfarb, Herman David	D	*New Brunswick*	54 Commercial Ave.
Goldy, Howard McCrea	L	*Jobstown*	108 Winants Hall
Hadden, William MacKinlay	M	*Poughkeepsie, N. Y.*	411 Ford Hall
Haelig, Arthur F.	C	*Bound Brook*	74 College Ave.
Hall, Frederick Arthur	A	*Asbury Park*	74 College Ave.

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Hanaway, William Lippincott	D	*Long Branch*	52 Jackson St.
Harkins, Claude Wesley	L	*Milltown*	542 George St.
Hilliard, Arthur Eugene	C	*Fort Lee*	70 Winants Hall
Hoffman, Samuel David	L	*New Brunswick*	123 Second Ave.
Horsford, George Sears	L	*Montclair*	78 College Ave.
Jacobs, Benjamin Ralph	L	*Plainfield*	26 Winants Hall
Johnson, Joel Munson	C	*Bayonne*	502 George St.
Keeler, Gilbert Brooks	L	*East Orange*	77 Hamilton St.
Kirk, Ronald Barrett	B	*Nutley*	126 College Ave.
Kohn, Herbert Akiba	M	*Newark*	312 Ford Hall
Kull, Frank David	L	*Jersey City*	421 Ford Hall
Lamb, George Edward	A	*Noank, Conn.*	66 Winants Hall
Langwith, Sanford Ricardo	E	*Oceanport*	41 College Ave.
Leber, Wendolin Randolph	M	*Woodbridge*	41 College Ave.
Levin, Max	D	*Trenton*	139 Somerset St.
Lott, William	D	*Atlantic City*	38 College Ave.
McBride, Leon Cornelius	A	*Princeton*	Princeton
McCully, Douglas Cruikshank	L	*Oradell*	126 College Ave.
Mack, Louis Foster	E	*Daretown*	97 Winants Hall
McVey, George Michael	A	*Leonardo*	38 College Ave.
Main, Hermas Victor	D	*Perth Amboy*	126 College Ave.
Mason, Henry Lea	M	*Trenton*	542 George St.
Massey, Albert Leslie	A	*Goshen*	58 Winants Hall
Masurovsky, Benjamin	A	*New Brunswick*	College Farm
Mehrhof, Norman Ripley	A	*Ridgefield Park*	41 College Ave.
Merquelin, Jerome Adrian	M	*Westfield*	542 George St.
Merritt, Frank Pearson	E	*Red Bank*	114 Ford Hall
Messerschmitt, Christopher	L	*Trenton*	310 George St.
Mezger, Erwin Robert	A	*Newark*	95 College Ave.
Miller, John Lloyd	C	*Hightstown*	38 College Ave.
Molineux, Paul Rexford	L	*Metuchen*	38 College Ave.
Muller, Frederick LcConge	B	*New York, N. Y.*	542 George St.
Mullison, David Gordon	L	*Keansburg*	542 George St.
Nielsen, Paul Victor Ingemann	A	*Perth Amboy*	152 Somerset St.
Norris, James Cox, Jr.	D	*Hightstown*	Hightstown
Ottinger, Garwood Russell	L	*Camden*	58 Winants Hall
Packard, Preston Kinney	E	*Stelton*	Stelton
Parker, Henry Griffith, Jr.	L	*New Brunswick*	165 College Ave.
Paxton, Charles Edward	D	*Jamesburg*	41 College Ave.
Perry, Cornelius Alfred	B	*Red Bank*	170 College Ave.
Perry, William Clerihew	A	*Paterson*	41 College Ave.

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Petit, Francis William	E	*Dunellen*	313 Ford Hall
Pettengill, Jason Seabury	L	*New York, N. Y.*	126 College Ave.
Pfaltz, Hugo Menzel	D	*Newark*	231 Ford Hall
Post, Charles Irwin	D	*East Orange*	411 Ford Hall
Pratt, Lewellyn Neville	L	*Nutley*	18 College Ave.
Quimby, Neal Dow	L	*Morristown*	38 College Ave.
Ravitz, Samuel	D	*Newark*	Newark
Reed, Shivler Bertram	C	*New Brunswick*	Bleecker Place
Redmond, Herbert Thomas	L	*Brooklyn, N. Y.*	18 College Ave.
Redmond, Mortimer James	L	*Brooklyn, N. Y.*	18 College Ave.
Robinowitz, William Henry	D	*Newark*	142 Somerset St.
Roth, Aaron	C	*Flemington*	150 Somerset St.
Ruchaisky, Morris	M	*Newark*	90 Winants Hall
Ruck, Walter	D	*New Brunswick*	303 Neilson St.
Rule, George Benjamin	C	*New Brunswick*	10 Union St.
Schoonmaker, William Lyon	L	*Saugerties, N. Y.*	11 Union St.
Sherwin, Alfred Knight	L	*Valhalla, N. Y.*	77 Hamilton St.
Sherwin, Martin Hutchinson	L	*Valhalla, N. Y.*	77 Hamilton St.
Skillman, Elwood Spencer	E	*Skillman*	141 Ford Hall
Sliker, Laurence	L	*Newark*	78 College Ave.
Smith, Perry Dickerson	E	*Jamesburg*	Bleecker Place
Solman, Harris	C	*Trenton*	Trenton
Sooy, Richard Wilfred	L	*Ocean City*	38 College Ave.
Spooner, Howard Marshall	E	*Rahway*	414 Ford Hall
Steiner, Leo	L	*Bayonne*	310 George St.
Stone, Robert Block	L	*New Brunswick*	2 Richardson St.
Strohl, Raymond	E	*Elizabeth*	Elizabeth
Summerill, John Morris, Jr.	B	*Penns Grove*	38 College Ave.
Sutton, John Jackson	A	*Warsaw, N. Y.*	78 College Ave.
Thompson, Merrill Hazelton	A	*Metuchen*	74 College Ave.
Van Brakle, Donald	L	*Keyport*	78 College Ave.
Van Derveer, George Jones	A	*Freehold*	78 College Ave.
Van Orden, Ralph P. S.	L	*Ridgewood*	18 College Ave.
Van Slyke, Edgar	B	*Nyack, N. Y.*	27 Hertzog Hall
Van Winkle, John Rigby Gill	C	*Rutherford*	74 College Ave.
Voorhees, Anson Willard	D	*Montclair*	39 College Ave.
Voorhees, Robert Woodruff	L	*Brooklyn, N. Y.*	Bleecker Place
Willard, Edward Abbott	E	*Hartford, Conn.*	95 College Ave.
Williams, James	C	*Hasbrouck Heights*	Bleecker Place
Wills, Seward Haff	B	*Stanhope*	95 College Ave.
Wood, George Dewey	L	*Kingston, N. Y.*	20 Hertzog Hall

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SOPHOMORE CLASS

A = Agricultural course
B = Biological course
C = Civil Engineering course
D = Chemistry course
E = Electrical Engineering course
L = Liberal course
M = Mechanical Engineering course

Abbott, Ransford James	L	*Atlantic City*	38 College Ave.
Abbott, Roy Twining	E	*Lambertville*	77 Winants Hall
Angleman, Kenneth Carpenter	E	*Asbury Park*	95 College Ave.
Angus, Malcolm Augustus	A	*Passaic*	541 Ford Hall
Angus, William Robertson, Jr.	A	*Oradell*	333 Ford Hall
Baker, Clinton Hobart	E	*Summit*	110 Winants Hall
Beck, Leopold	E	*Linden*	41 Winants Hall
Berry, Edward Arnold	M	*Hackensack*	114 College Ave.
Betts, Philander Hammer	E	*Montclair*	421 Ford Hall
Beugless, Francis Alexander	C	*Burlington*	18 College Ave.
Beyer, Walter Emil	C	*Atlantic City*	78 College Ave.
Birrell, Donald Van Court	C	*Newark*	74 College Ave.
Black, Leslie Milo	A	*Morristown*	542 George St.
Boocock, William Robert	L	*Buffalo, N. Y.*	77 Hamilton St.
Boudinot, Watson Henry, Jr.	L	*New Brunswick*	38 College Ave
Brady, Frank Andrew	C	*Trenton*	Trenton.
Brenner, George John	C	*New York, N. Y.*	514 Ford Hall
Brien, George Mandeville	L	*Orange*	78 College Ave.
Brinckerhoff, Theodore	L	*Beacon, N. Y.*	131 Ford Hall
Briwa, William Daniel	A	*Hudson, N. Y.*	126 College Ave.
Brower, Herbert Gustave	A	*Ridgewood*	126 College Ave.
Brown, John Russell	M	*Paterson*	334 Ford Hall
Brown, Theron Phillips	E	*Brooklyn, N. Y.*	521 Ford Hall
Burbank, Rembert Whiting	M	*Upper Montclair*	8 Richardson St.
Cahill, Frank Victor	C	*South Orange*	502 George St.
Callison, William Edgar	B	*Bound Brook*	Bound Brook
Christie, William Donald	M	*Ridgewood*	8 Richardson St.
Clark, Percy Morgan	D	*Hasbrouck Heights*	76 Winants Hall
Clark, Walter Watt, Jr.	L	*Atlantic City*	78 College Ave.
Clayton, Allen Byron	A	*Winthrop, Mass.*	502 George St.
Cohen, Jerome	D	*Brooklyn, N. Y.*	31 Winants Hall
Cook, Charles Clarence	A	*Wrightstown*	College Farm
Cowie, George Howard, Jr.	L	*Rahway*	78 College Ave.
Cray, Raymond Edgar	A	*Stockton*	38 College Ave.
Davis, William	A	*New Brunswick*	43 Church St.

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Dettlinger, Frederick Wilson	M	*Long Branch*	531 Ford Hal[1]
DeWitt, Douglas Holden	C	*Oradell*	424 Ford Hal[1]
Deyo, Albert DuBois	L	*Kingston, N. Y.*	27 Hertzog Hal[1]
Dieffenbach, Charles	D	*Jersey City*	87 Winants Hal[1]
Dill, William Wootton	A	*Atlantic City*	110 Winants Hal[1]
Dixon, James Lynnewood	L	*Haddonfield*	117 Winants Hal[1]
Doremus, Frederick Barny	L	*Rockaway*	321 Ford Hal[1]
Dornan, Robert Reach	C	*Atlantic City*	78 College Ave.
Duffy, Paul Joseph	L	*Jersey City*	74 College Ave.
Durand, Edwin Martin	D	*Rahway*	77 Hamilton St.
Dutson, Edwin Howard	L	*New Brunswick*	4 Union St.
Eckhardt, Joseph Walter	A	*Folsom*	114 Ford Hall
Eisenman, Isadore	A	*Flemington*	31 Winants Hall
Ely, Allen Chriest	C	*Hightstown*	105 Winants Hall
Feirer, William Anthony	B	*Roselle Park*	531 Ford Hall
Fetter, Claude Ker	C	*Trenton*	Trenton
Foulds, Andrew Kip	M	*Passaic*	134 Ford Hall
Fuller, Eugene Van Nostrand	D	*Nutley*	424 Ford Hall
Gardella, Everett Peter	A	*Vineland*	College Farm
Genzmer, Frederic Carroll	A	*Newark*	523 Ford Hall
Gerke, Henry	E	*Westwood*	126 College Ave.
Goldsmith, Harry Wolfe	E	*Keyport*	140 Winants Hall
Graham, Theodore Kinne	M	*Paterson*	114 College Ave.
Groepler, Kurt	A	*Barnegat*	106 Winants Hall
Hall, David Nevius	L	*Somerville*	414 Ford Hall
Harad, Herman	M	*Newark*	Newark
Harrington, George Francis	E	*New York, N. Y.*	434 Ford Hall
Hersohn, William	B	*Atlantic City*	111 Ford Hall
Hilliard, Joseph Carl	M	*Fort Lee*	70 Winants Hall
Hitchner, Wilbert Baker, Jr.	L	*Woodstown*	74 College Ave.
Hofer, Clarence John	B	*Metuchen*	38 College Ave.
Hoffman, Frederick Allen	M	*Moorestown*	74 College Ave.
Hsieh, Hui	D	*Kiangsu, China*	62 Winants Hall
Hubbard, John Gardiner	M	*Allendale*	126 College Ave.
Irving, Donald Freeman	A	*Murray Hill*	131 Ford Hall
James, Donald Mortimer	A	*Montclair*	College Farm
Johnson, Frank Louis	L	*Rockaway*	542 George St.
Johnson, Garrett Irons	L	*Monmouth Beach*	38 College Ave.
Jones, James Carlton	L	*Rahway*	77 Hamilton St.
Kahle, Harold Cornell	M	*Long Branch*	41 College Ave.
Karshmer, Nathan	B	*New Brunswick*	232 French St.

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Kelly, Joseph Harold	E	*Atlantic City*	126 College Ave.
Kenny, Joseph	L	*Hoboken*	140 Winants Hall
Knitter, Carl Ludwig	B	*Newark*	244 Ford Hall
Koerner, Theodore	L	*Newark*	98 Winants Hall
Kuhl, Lewis Charles, Jr.	C	*Atlantic City*	235 Ford Hall
Kuhlthau, Daniel Garver	B	*Milltown*	542 George St.
Kulp, Charles Ernest	L	*New Brunswick*	142 Livingston Ave.
Lake, Lewis Henry	E	*Pleasantville*	234 Ford Hall
Lamscha, Richard Burton	M	*Butler*	221 Ford Hall
Lathrop, Churchill Pierce	L	*Montclair*	431 Ford Hall
Leon, Benjamin Sal	L	*Newark*	441 Ford Hall
Leonard, Samuel Irving	L	*Arlington*	502 George St.
Levine, Ernest	C	*New Brunswick*	203 S. Fourth Ave.
Mackessy, Thomas Francis	M	*Elizabeth*	422 Ford Hall
Mandeville, Francis Tibbals	E	*Boonton*	1 Winants Hall
Messer, Charles Leverich	L	*Nutley*	126 College Ave.
Meyer, Burton Cook	L	*Brooklyn, N. Y.*	95 College Ave.
Molineux, Walter Lang	L	*Metuchen*	38 College Ave.
Moore, Lewis Wentworth	L	*Elizabeth*	334 Ford Hall
Mount, George Washington	A	*Trenton*	74 College Ave.
Muller, Julius Frederick	A	*Ridgewood*	324 Ford Hall
Nicol, Charles Miller	B	*Hawthorne*	542 George St
O'Dair, Edward Frank	E	*New York, N. Y.*	142 Ford Hall
Oxenford, Bishop Adair	L	*Metuchen*	Metuchen
Palen, Ernest Raymond	L	*Kingston, N. Y.*	35 Hertzog Hall
Peirce, Allen Flitcraft	D	*Westfield*	95 College Ave.
Petersen, Roy Gamaliel	C	*Perth Amboy*	Perth Amboy
Poeter, Carl William	M	*Newark*	Newark
Potter, Raymond Vincent	L	*New Brunswick*	52 College Ave.
Pratt, Harry Hayner	A	*Eagle Bridge, N. Y.*	41 College Ave.
Quigley, John Turnbull	E	*East Orange*	74 College Ave.
Randolph, Warren Crowell Fitz	A	*New Brunswick*	38 College Ave.
Ray, Harold William	A	*Westfield*	95 College Ave.
Reid, Everett Gordon	L	*Brooklyn, N. Y.*	18 College Ave.
Rieman, Casper William, 3d	D	*Bloomfield*	95 College Ave.
Robbins, William Rei	A	*Clifton*	324 Ford Hall
Rollins, Robert Henry, Jr.	D	*Weehawken*	87 Winants Hall
Runyon, Harold Davis	L	*New Brunswick*	38 College Ave.
Russell, William Knight	L	*Jersey City*	541 Ford Hall
Ryder, Herbert Kenneth	C	*Monroe, N. Y.*	514 Ford Hall

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Saxe, Raymond Daniel	A	*Catskill, N. Y.*	41 College Ave.
Simon, Robert Edward	E	*New Brunswick*	423 Magnolia Ave.
Smith, Leon Harold	C	*Saugerties, N. Y.*	66 Winants Hall
Snyder, Laurence Hasbrouck	A	*Tompkinsville, N. Y.*	105 Winants Hall
Sooy, George Wanamaker, Jr.	D	*Ocean City*	38 College Ave.
Stager, Arthur Floyd	A	*Nutley*	18 College Ave.
Stone, Ralph Emerson	L	*Peekskill, N. Y.*	542 George St.
Storck, Donald George	L	*Hasbrouck Heights*	Bleecker Place
Tailby, Roland Vincent	D	*New Brunswick*	266 Raritan Ave.
Taylor, John Ray	M	*New Brunswick*	308 Raritan Ave.
Terhune, Herman Ramsey	B	*Ridgewood*	8 Richardson St.
Till, Louis	M	*New Brunswick*	340 George St.
Van Buskirk, Raymond Elwood	L	*Montclair*	431 Ford Hall
Van Orden, Philip Stanley	B	*Spring Valley, N.Y.*	Bleecker Place
Voorhees, Garrett Scott, Jr.	A	*Basking Ridge*	211 Ford Hall
Wheelock, Robert Samuel	L	*West Winfield, N. Y.*	95 College Ave.
Wieda, Elmer George	L	*Paterson*	214 Ford Hall
Winters, Russell Harold	C	*Hamburg*	542 George St.
Wolff, Stephen Julius	A	*Montclair*	126 College Ave.
Zullo, Carmen Joseph	M	*Port Reading*	78 Winants Hall

FRESHMAN CLASS

Class of 1923

A = Agricultural course **D = Chemistry course**
B = Biological course **E = Engineering courses**
L = Liberal course

Africano, Julius Victor	B	*West Hoboken*	150 Somerset St.
Africano, Scipio Humbert	B	*West Hoboken*	150 Somerset St.
Alexander, John	L	*Newark*	98 Somerset St.
Alexander, Saul	E	*Passaic*	16 S. Second Ave.
Anderson, Howard Service, Jr.	B	*Jersey City*	643 Ford Hall
Anekstein, Herman Harvey	L	*New Brunswick*	115 French St.
Angen, John Harrison	E	*Elizabeth*	Elizabeth
Atkinson, George Randall	B	*Paterson*	114 College Ave.
Aydelott, Ernest Smith	E	*Pekin, Ill.*	221 Ford Hall
Aydelott, William Rupert	E	*Pekin, Ill.*	221 Ford Hall
Balikjian, Hratchia	L	*Tennent*	Tennent
Barkelew, Richard Wightman	L	*New Brunswick*	33 Remsen Ave.

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Barny, Frederick Sutton	L	*New Brunswick*	55 Paterson St.
Bartlett, Henry Mandeville	E	*Poughkeepsie, N. Y.*	98 Easton Ave.
Bassett, Clinton Sewall	A	*Bound Brook*	Bound Brook
Batsford, Harold Meister	E	*Menlo Park*	Menlo Park
Beattie, Crawford Stuart	E	*Newark*	98 Somerset St.
Bebout, John Elber	A	*Millington*	125 Winants Hall
Becker, Beda Voigt	L	*Newark*	38 College Ave.
Bender, Henry Philip	E	*Brooklyn, N. Y.*	84 College Ave.
Bennett, Robert Henry	D	*Clifton*	542 Ford Hall
Benzoni, Edward Henry	L	*Town of Union*	38 College Ave.
Berry, Robert Ward	E	*Hackensack*	443 Ford Hall
Bird, William	L	*Union Hill*	91 Easton Ave.
Bisson, Thomas Arthur	E	*Teaneck*	136 Hamilton St.
Booth, Richard Allen	E	*Orange*	32 High St.
Borman, Earle Kirkpatrick	B	*New Brunswick*	204 Easton Ave.
Bosquett, Daniel Aloysius Sullivan	A	*Jersey City*	41 College Ave.
Breen, Clifford	E	*Metuchen*	Metuchen
Brokaw, Robert Elroy	E	*Bound Brook*	Bound Brook
Brubaker, William, Jr.	A	*Mountain View*	126 College Ave.
Bulkley, Reginald Walbridge	E	*Plainfield*	527 Ford Hall
Burke, James Masterson	L	*Trenton*	511 Ford Hall
Busch, Lewis David	L	*New Brunswick*	24 John St.
Butler, Edward Joseph	E	*Atlantic City*	142 Ford Hall
Carmen, Ralph Calvin	L	*Bound Brook*	Bound Brook
Casey, Carol Van Ness	D	*Hilton*	98 Somerset St.
Cathers, Eugene Bayard	L	*New Brunswick*	103 Bayard St.
Chamberlain, Roland Woodruff	A	*Mendham*	98 Somerset St.
Chase, Hannibal Harrison	L	*Rahway*	Rahway
Colburn, William Snow	L	*Fitchburg, Mass.*	84 Paterson St.
Colleran, Robert James	E	*Highlands*	263 Townsend St.
Comunale, Anthony Roderick	D	*Colonia*	Colonia
Connamacher, Harold Solomon	B	*Newark*	98 Winants Hall
Cook, Harvey Reavill	L	*New Brunswick*	212 Lawrence Ave.
Cook, Owen Jones	D	*Bound Brook*	Bound Brook
Cooper, Drury Walls, Jr.	L	*Montclair*	77 Hamilton St.
Crankshaw, Charles William, Jr.	B	*East Orange*	78 College Ave.
Crawford, Robert Wallace	L	*East Orange*	95 College Ave.
Croker, Leander Hillis	E	*Wildwood*	202 Handy St.
Cuming, Thomas Wilbur	L	*Plainfield*	Y. M. C. A.
Cunningham, Charles Wesley	E	*Catskill, N. Y.*	34 Winants Hall

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Davis, Everett Fogg	A	*Salem*	40 Winants Hall
deRussy, René Amédée	D	*Woodbridge*	1 Laurel Place
Desmond, Andrew Daniel	L	*Woodbridge*	Woodbridge
Dickinson, Edward	E	*Ridgewood*	502 George St.
Dickson, Arthur Lamont	D	*Jersey City*	543 Ford Hall
Diederich, Alfred Louis	A	*Morsemere*	136 Hamilton St.
Dittmar, Kenneth Anton	E	*New Brunswick*	159 Albany St.
Dixon, Warren, Jr.	L	*Bloomfield*	136 Winants Hall
Dougherty, Elmer Ellsworth, Jr.	D	*Bloomfield*	113 Winants Hall
DuBois, Wayland Ayer	L	*Freehold*	434 Ford Hall
Duff, Nathan	L	*Woodbridge*	128 Neilson St.
Dufft, James Henry	L	*Mt. Vernon, N. Y.*	74 College Ave.
Dunham, Frederic William	E	*New Brunswick*	21 First Ave.
Duryee, Eugene Clarke	L	*Jersey City*	24 Hertzog Hall
Ellis, John Munn	L	*Montclair*	18 College Ave.
Entwistle, Oliver Herbert	L	*Parsippany*	98 Somerset St.
Erickson, Edward Harold	E	*New Brunswick*	33 First Ave.
Evans, Joseph Paul	E	*Moorestown*	8 Richardson St.
Ewing, Joseph Marquis	L	*Jersey Shore, Pa.*	Y. M. C. A.
Fairchild, James Calvin	E	*Bayonne*	502 George St.
Federighi, Henry	B	*New Brunswick*	New Brunswick
Finley, William Fiss	A	*East Orange*	Y. M. C. A.
Fischler, Herbert	L	*New Brunswick*	25 Kirkpatrick St.
Francis, Charles Russell	E	*Holmeson*	3 High St.
Francisco, Cyrus Peter	E	*Asbury Park*	3 High St.
Francisco, Kenneth Newton	D	*North Caldwell*	82 Somerset St.
Francke, John Cramer	E	*New Brunswick*	220 Lincoln Ave.
Fraser, George Durland	E	*Newburgh, N. Y.*	141 Ford Hall
French, Walter Edward	L	*Moorestown*	38 College Ave.
Furbeck, Howard Rollins	L	*Annandale*	45 Hertzog Hall
Geib, Harry Carl	D	*Bloomfield*	113 Winants Hall
Gibson, George	E	*Upper Montclair*	195 Codwise Ave.
Gibson, Wallace Henry	A	*Nutley*	98 Somerset St.
Gidley, Edwin Louis	D	*South Bound Brook*	502 George St.
Giebel, Leo Edwin	L	*New York, N. Y.*	38 College Ave.
Glatzel, Joseph	E	*Paterson*	214 Ford Hall
Glenn, Elmer Allen	L	*Brooklyn, N. Y.*	10 Bartlett St.
Goldberg, Victor	E	*New York, N. Y.*	99 Winants Hall
Graham, Archibald Foster	L	*Paterson*	114 College Ave.
Griffin, Oscar Darius	E	*Ocean Grove*	95 College Ave.
Gross, George Antoine	E	*Arlington*	502 George St.

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Grothe, John Dietrich	D	*Mexico City, Mexico*	18 College Ave.
Grube, Frank William	E	*East Orange*	129 Winants Hall
Haas, Charles Jethro	L	*Roxboro, Pa.*	College Farm
Hammond, Samuel Irving	E	*Brooklyn, N. Y.*	84 College Ave.
Hance, Earle Whitaker	D	*Brooklyn, N. Y.*	2 Winants Hall
Harrison, Arthur Jewett	L	*Brooklyn, N. Y.*	521 Ford Hall
Harrison, William Henry	A	*Phillipsburg*	Y. M. C. A.
Hawes, Arthur LaFayette	E	*Worcester, Mass.*	282 Hamilton St.
Hawes, Frederick Albert	E	*Worcester, Mass.*	282 Hamilton St.
Hearn, Ralph Cunnion	E	*New York, N. Y.*	18 College Ave.
Hein, Illo	A	*Weehawken*	118 Winants Hall
Heine, Henry John	L	*Union Hill*	91 Easton Ave.
Heitkamp, Donald Monroe	E	*Chatham*	8 Richardson St.
Hicks, Douglas Mallory	L	*New Brunswick*	32 Harrison Ave.
Hill, Joe James	D	*Bartow, Fla.*	234 Easton Ave.
Hiller, Ralph Frederick	L	*Hurley, N. Y.*	102 Winants Hall
Johnson, Irving Collier	A	*Bayonne*	502 George St.
Johnson, Warren Russell	E	*Arlington*	24 College Ave.
Jones, John Warren Joseph	E	*New Brunswick*	152 Somerset St.
Kane, Noel Taylor Welsh	A	*Beverly*	18 College Ave.
Kennedy, George Henderson	D	*Jersey City*	139 Winants Hall
Kent, Nathaniel Johnson	E	*Pine Brook*	82 Somerset St.
Kibbe, James Irving	L	*New Brunswick*	51 Adelaide Ave.
Kleinhans, Chauncey Rodney	D	*Perth Amboy*	Perth Amboy
Klugman, Harry Carl	E	*Newark*	55 Winants Hall
Kuser, Rudolph Victor, Jr.	L	*Trenton*	Trenton
Lambert, Harold Rodman	L	*New Brunswick*	145 Codwise Ave.
Lamola, Romeo	L	*Hackensack*	121 Winants Hall
Layton, David Waddington	E	*Woodstown*	534 Ford Hall
Leach, Earl George	E	*Lee, Mass.*	18 College Ave.
Lecraw, William Foster	L	*Plainfield*	423 Ford Hall
Levine, Nathan	E	*Atlantic City*	219 Easton Ave.
Linck, Eberhard Otto	A	*Montclair*	23 Winants Hall
Lincoln, Allan Bruce	E	*Bayonne*	502 George St.
Lindsay, Brainerd Dunham	L	*Rahway*	Rahway
Lindsay, George Mathieson	E	*Belleville*	81 Winants Hall
Lindsay, Perry Champlin	E	*Trenton*	134 Winants Hall
Lofquist, Spencer	L	*East Orange*	84 College Ave.
Logan, William, Jr.	E	*Dumont*	Y. M. C. A.

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Lomet, Pierre Francis	E	*Woodcliff-on-Hudson*	81 Winants Hall
Love, Samuel Livingston	L	*Rahway*	Rahway
Love, Victor Newcomer	L	*Woodbridge*	Woodbridge
Loveland, Heber Anthony	L	*Bridgeton*	73 Winants Hall
Lynch, Albert Edward O'Fake	B	*Newark*	Newark
MacBain, Hugh Dalgarno	B	*Closter*	83 Commercial Ave.
MacDonald, George Kenneth	L	*New Brunswick*	586 George St.
Mackay, James Charles Fee	L	*New York, N. Y.*	18 College Ave.
MacLeod, Harry Palmer	L	*Kearny*	502 George St.
McWilliams, John Wilbur	L	*Bernardsville*	211 Ford Hall
Magee, George Richard	D	*West Camp, N. Y.*	34 Winants Hall
Mahler, Harry Aloysius	D	*Arlington*	502 George St.
Manwaring, Walter Owen	A	*Midland Park*	236 Somerset St.
Martin, Warren Shepard	E	*Hasbrouck Heights*	78 College Ave.
Matheis, Leland Victor	E	*Philmont, N. Y.*	70 Winants Hall
Meehan, James Thomas	L	*New York, N. Y.*	148 Somerset St
Meistrell, Harland Leo	L	*Brooklyn, N. Y.*	74 College Ave.
Merritt, Frederic Pink	A	*Kingston, N. Y.*	73 Winants Hall
Meyer, Herbert Hulman	E	*Newark*	98 Somerset St.
Mickel, Woodburn	E	*Elmer*	97 Winants Hall
Middleton, Edwin Braddock	E	*Wildwood Crest*	202 Handy St.
Miller, William Anthony	L	*Old Bridge*	Old Bridge
Millison, Harold	L	*Rutherford*	23 Winants Hall
Mills, Otis Farrand	L	*Rahway*	Rahway
Mitchell, Dean Warren	E	*Vineland*	10 Bartlett St.
Mitchell, Walter Frederic	E	*Vineland*	10 Bartlett St.
Mook, Robert Kent	E	*Metuchen*	Metuchen
Mooney, Charles William	E	*Scotch Plains*	Scotch Plains
Moore, Chester Arthur	L	*Mildred, Ky.*	41 Hertzog Hall
Morrison, Chester Ludington	E	*Atlantic City*	39 College Ave.
Mullin, Wilfred Vincent	A	*Red Bank*	263 Townsend St.
Nelson, Julius Richards	A	*New Brunswick*	85 Adelaide Ave.
Nemeth, Stephen Alexander	A	*Orange*	78 Winants Hall
Newman, Paul Fletcher	D	*Lakewood*	15 Hardenbergh St.
Noble, John Henry	E	*East Orange*	102 Winants Hall
Olivit, Ambrose Ripenburg	L	*Tivoli, N. Y.*	120 Winants Hall
O'Toole, Arthur Lawrence	E	*Newark*	136 Hamilton St.
Ottman, Frederick Ray	D	*Ridgewood*	141 Ford Hall
Palmatier, William Atwater Cooke	D	*Catskill, N. Y.*	534 Ford Hall

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Partridge, Ralph Newton	L	*W. Philadelphia, Pa.*	38 College Ave.
Pendleton, Edwin Crompton	D	*Frenchtown*	143 Ford Hall
Pennington, Harry Freeman	E	*New Brunswick*	231 Codwise Ave.
Perselay, Nathan	L	*Elizabeth*	Elizabeth
Pfaffhausen, Herbert Leo	E	*Union Hill*	91 Easton Ave.
Pilz, George Frank	B	*Guttenberg*	114 Ford Hall
Plummer, Frank Edward	A	*Bridgeton*	132 French St.
Quackenbush, David P.	E	*Paterson*	114 College Ave.
Raub, Howard Burton	L	*Chadwicks, N. Y.*	38 College Ave.
Redmond, Cyril James	L	*Brooklyn, N. Y.*	18 College Ave.
Reiff, Leslie Edward	E	*Irvington*	84 College Ave.
Richards, Thomas, Jr.	E	*Somerville*	Somerville
Richardson, Alan Houldsworth	D	*New Brunswick*	216 George St.
Roberts, Philip Ogden	D	*Jersey City*	95 College Ave.
Robinson, George Boyd	L	*Moorestown*	38 College Ave.
Rochefsky, Barnett Benjamin	E	*Etra*	55 Winants Hall
Rodda, John Landon	D	*Newton*	246 George St.
Ross, Clarence Arthur	A	*Brooklyn, N. Y.*	74 College Ave.
Rowe, John Brown	L	*Warsaw, N. Y.*	18 College Ave.
Ruf, Louis Frederick, Jr.	E	*Cleveland, Ohio*	205 Redmond St.
Sander, William Ernest	D	*Paterson*	542 Ford Hall
Scarr, Henry Francis	L	*Hasbrouck Heights*	23 Winants Hall
Schade, Gilbert Henry	L	*Twin Falls, Idaho*	126 College Ave
Schaffer, Donald Norton	L	*Philadelphia, Pa.*	38 College Ave.
Schaible, Kenneth Woodruff	A	*Shiloh*	116 Winants Hall
Schoonmaker, Harry Howard, Jr.	E	*Paterson*	59 Wyckoff St.
Schoonmaker, Milton Jay	B	*Hasbrouck Heights*	23 Winants Hall
Scott, John Alfred	B	*New Brunswick*	118 Raritan Ave.
Scrubsky, Isadore	L	*Perth Amboy*	Perth Amboy
Scudder, John	L	*New Brunswick*	River Road
Seiffert, Morgan Roe	E	*New Brunswick*	38 Remsen Ave.
Sellers, Carroll Knauer	D	*Garwood*	102 Winants Hall
Sewall, Samuel Donnel	L	*New York, N. Y.*	282 Hamilton St
Shackelford, Leon James	L	*Newark*	Newark
Sherman, Allen Curtis	D	*Brooklyn, N. Y.*	18 College Ave.
Sheyer, Marks Henry	E	*Perth Amboy*	Perth Amboy
Shier, Harry Norman	A	*Manasquan*	148 Somerset St.
Shultz, Charles Alvan	E	*Jamesburg*	502 George St.
Skillman, William Thomas	E	*Skillman*	Skillman
Smith, Arthur Leland Marshall	B	*New Brunswick*	64 Bayard St.

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Sparks, William Edward	L	*Brooklyn, N. Y.*	18 College Ave.
Stern, Philip Van Doren	E	*Newark*	Newark
Stevenson, Wilbert Everett	L	*Bernardsville*	152 Somerset St.
Stillwell, Herman Polhemus	L	*Mantaloking*	542 George St.
Strauss, Joshua Leonard	A	*Brooklyn, N. Y.*	10 Bartlett St.
Stryker, Gysbert Owen	E	*Bound Brook*	Bound Brook
Stuart, William Leslie	E	*Rahway*	Rahway
Summerill, Thomas Carney	E	*Penns Grove*	134 Winants Hall
Sutton, Anthony Vincent	L	*New Brunswick*	5 Union St.
Sutton, Willard Franklin	E	*Los Angeles, Cal.*	224 Ford Hall
Swenson, Lawrence Elton, Jr.	D	*Montclair*	2 Winants Hall
Teller, Daniel Woolsey, Jr.	B	*Westwood*	121 Winants Hall
Terhune, Alfred McKinley	L	*Newark*	136 Hamilton St.
Terwilliger, James Harold, Jr.	L	*New Brunswick*	223 Lincoln Ave.
Thomas, Raymond John	E	*New Brunswick*	95 Easton Ave.
Tischler, Nathan	E	*Rosenhayn*	55 Winants Hall
Toal, George	L	*New York, N. Y.*	142 Somerset St.
Todd, Charles Toms	D	*Dunellen*	78 College Ave.
Toms, Raymond Wheeler	E	*Springdale, Conn.*	118 Winants Hall
Topkins, Victor Alan	A	*Califon*	96 Bayard St.
Totten, Robert Klotz	L	*Morris Plains*	114 College Ave.
Travell, Winthrop	E	*Ridgewood*	241 Ford Hall
Tritenbach, Theodore George	L	*New Brunswick*	22 Hertzog Hall
Troup, Harry	L	*Ridgewood*	74 College Ave.
Tyson, Edmund	A	*Princeton*	146 Winants Hall
Vernon, Daniel	L	*Upper Montclair*	84 College Ave.
Vogel, Rudolph, Jr.	E	*Manasquan*	148 Somerset St.
Von Glahn, Ralph Herman	A	*Paterson*	126 Winants Hall
Ward, Richard Parkison, Jr.	E	*Dover*	84 College Ave.
Weis, Arthur Hugh	E	*Fair Lawn*	59 Wyckoff St.
Weisberg, David Paul	D	*Tampa, Fla.*	98 Somerset St.
Weitzman, Samuel	E	*Newark*	90 Winants Hall
Wells, Joseph	E	*Germantown, Pa.*	38 College Ave.
Whiting, Kenneth Parks	E	*Yonkers, N. Y.*	129 Winants Hall
Wills, John Haff	L	*Stanhope*	95 College Ave.
Wilson, Sewall Taylor	L	*Bayonne*	Bayonne
Wirth, George Robert August	L	*New York, N. Y.*	43 Hertzog Hall
Wong, Joseph	E	*Newark*	145 Winants Hall
Woodworth, Ralph Huntington	E	*Irvington*	Y. M. C. A.
Wootton, Harry, Jr.	E	*Atlantic City*	39 College Ave.
Wray, Robert	A	*Closter*	83 Commercial Ave.
Wright, Cassius Marcus	D	*Bloomfield*	113 Winants Hall

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SPECIAL STUDENTS

Not candidates for a degree

A = Agricultural Course B = Biological Course
K = Ceramics course

Bedson, Ramsey Darling	K	*Trenton*	Trenton
Biekart, Henry Michiel	A	*New Brunswick*	21 Jones Ave.
Edgar, Albert Charles	K	*Metuchen*	Metuchen
Lott, Ralph Bacon	B	*Philadelphia, Pa.*	237 Grant Ave.
Malloy, John Augustus	L	*Trenton*	134 Ford Hall
Mathiasen, Oscar E.	K	*Keyport*	38 College Ave.
Turner, Eric	K	*Trenton*	38 College Ave.
Van Mater, Joseph Appleton, Jr.	A	*Plainfield*	77 Hamilton St.
Wood, Leslie Townsend	B	*New Brunswick*	Y. M. C. A.

SUMMARY

Graduate Students	18
Seniors, Class of 1920	91
Juniors, Class of 1921	134
Sophomores, Class of 1922	136
Freshmen, Class of 1923	253
Special Students	9
Total Rutgers College	641

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COLLEGE FOR WOMEN

Sophomore Class

Class of 1922

A=A.B. course
B=Litt.B. course
C=B.Sc. course
D=B.Sc. course in Home Economics

Barney, Esther Irene	C	New Brunswick
Barr, Berniece Hull	A	Metuchen
Benedict, Louisa Ogden	A	Arlington
Boynton, Katharine	A	St. Johnsbury, Vt.
Broedel, Hermine Rose	C	Bradley Beach
Clark, Elizabeth Stults	C	New Brunswick
Coddington, Hazel Allen	D	Plainfield
Cooper, Esther Nicholas	A	Montclair
Crane, Metta Beryl	D	Bayonne
Cronshey, Aline	A	Morris Plains
Dahmer, Helen Crawford	B	New Brunswick
Darwent, Lillian Alice	A	Cranford
Durham, Elizabeth Wyckoff	A	New Brunswick
Faint, Ellen Marion	A	Roselle Park
Gaw, Margaret Louise	A	North Bergen
Gundrum, Kathryn	B	South Amboy
Hemler, Alicia	A	East Orange
Higgins, Wilhelmina	A	Somerville
Hill, Grace Helen	A	Jersey City
Hitchner, Helen	D	Bridgeton
Hoitsma, Tillie	D	Paterson
Hulsart, Emily Couse	B	Manasquan
Leonard, Florence Marie	A	West End
McKusick, Charlotte Dorothy	D	Cranford
Maier, Agnes Lucinda	D	Maplewood
Mayberry, Bessie Louisa	A	Bernardsville
Mullin, Ruth Letitia	B	New Brunswick
Nelson, Marguerite Hamilton	B	New Brunswick
Nielsen, Irene Kristine	A	Dunellen
Poole, Agnes	D	Newark
Reif, Edna Anna	A	New York City
Roberts, Helena Frances	B	Hasbrouck Heights
Schenck, Cecelia Kinney	B	Metuchen

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SCHNEFEL, MARGARETE	D	Newark
SEARING, ELEANORE VALENTINE	A	Plainfield
SHERWOOD, KATHARINE BONNER	B	Summit
SHIVERS, LAURA GRACE	D	Haddonfield
SKILLMAN, ELIZABETH GERTRUDE	C	New Brunswick
SPADER, MARY LOUISE	A	New Brunswick
STORMS, LILLIAN BEATRICE	A	Ridgewood
STRYKER, ELSIE BEATRICE	C	Middlebush
THOMPSON, RUTH	C	New Brunswick
VOUGHT, KATHRYN IRVEN	D	Philadelphia, Pa.
WATMAN, HELEN	C	Bayonne
WATSON, EUNICE MANNING	A	New York City
WEBB, GRACE ELEANORE	B	Hasbrouck Heights
WEBBER, MAE JAQUETTE	A	Woodstown

FRESHMAN CLASS

Class of 1923

A=A.B. course
B=Litt.B. course
C=B.Sc. course
D=B.Sc. course in Home Economics

ANDERSON, ESTHER	D	Rossville, N. Y.
BASCH, ADOLFA	A	Paterson
BRINAMEN, BLANCHE	D	South Amboy
BRINAMEN, SYLVIA	D	South Amboy
BROWN, GWENDOLYN LAWRENCE	C	Jamesburg.
BROWN, MARION ALICE	D	Rutherford
BRUGGEWORTH, VIOLET BABETTE	D	Weehawken
BUCKLEY, ELIZABETH	B	Philadelphia, Pa.
BUTCHER, VIRGINIA	A	Haddon Heights
CALLISON, IRMA	D	Bound Brook
CAMPBELL, DOROTHY KINGSLAND	A	Jersey City
COHEN, NATHALIE	A	Paterson
COLLINS, MARY	A	Short Hills
CONOVER, ELSIE	D	Red Bank
CONRAD, MILDRED	C	Hackensack
COPPERSMITH, SOPHIE	C	Newark
CORR, ALICE	A	Bayonne
DASSORI, CORNELIA	A	New Brunswick
DAVIS, ISABEL	A	North Branch
DOLPH, ANNIS	B	Metuchen
DRAKE, M. VIVA	B	Chester

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Duckers, Grace	C	Somerville
Edinger, Beatrice	D	Jersey City
Edinger, Carlista	D	Jersey City
Ennis, Elizabeth	D	Metuchen
Florea, Sylvia	B	Long Branch
Ford, Katherine	A	Metuchen
Frazee, Margaret	A	Nutley
Gaw, Grace	A	North Bergen
Gelhaar, Beryl Jessie	A	Jersey City
Goodrich, Emily Post	A	Somerville
Griffiths, Ruth Elizabeth	B	Merchantville
Grimes, Jane Dorothea	C	Newark
Hammond, Marion Polhemus	A	Englishtown
Hance, Marion (Mrs.)	D	New Brunswick
Heath, Myrtle	D	Englewood
Heuer, Emma	D	Union
Hitchner, Isabel	B	Bridgeton
Holland, Cecilia Gaines	D	Montclair
Holmes, Elizabeth West	A	Merchantville
Hunter, Margaret Isabelle	A	Arlington
Jackson, Gladys	B	Camden
Kamm, Estelle	A	Newark
Landenberger, Amelia	C	Newark
Lane, Genevieve Marie	D	New Brunswick
McQuilliande, Eleanor Catherine	B	Stelton
Mershon, Martha	D	New Brunswick
Metlar, Katherine Pauline	D	New Brunswick
Mitchell, Helen Esther	B	Stelton
Mohn, Rebecca	D	Port Richmond, N. Y.
Morrison, Margaret Louise	D	East Orange
Mower, Mildred	D	Newark
Mulcahy, Elizabeth	A	South Orange
Norton, Muriel	A	Jersey City
Ohmes, Irma	C	Hasbrouck Heights
Peters, Marjorie Helen	D	Short Hills
Powell, Katherine	D	Weehawken
Reuterdahl, Sigrid	A	Weehawken
Richardson, Elizabeth Southward	A	New Brunswick
Rittenhouse, Julia	B	Merchantville
Robbins, Huldah Corlett	D	Clifton

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ROGERS, FREDA PEARL	D	Jamesburg
RUBENSTEIN, MINNIE	B	Jersey City
RUSCH, MARION	D	Kenvil
SABLOFF, SOPHIE	D	Arlington
SHARP, GLADYS	D	Pleasant Grove
SMITH, MARY AGNES	A	South River
STIGLITZ, HANNA	B	North Plainfield
STOKES, EMMA MELVINA	A	Freehold
SUTTER, PAULINE	D	Prince Bay
THOMAS MIRANDA CHRISTIE	B	Newark
TIERNEY, RUTH	D	Paterson
TITSWORTH, JULIA	A	Sussex
TORRENS, EVELYN LUCILLE	A	South Orange
VANDEGRIFT, LOUISE	D	Delanco
VAN DOREN, HELEN	B	East Millstone
WALKER, MARION	C	Newark
WALSH, ANNA DOROTHEA	A	Trenton
WEISS, VIOLA MURDOCK	B	New Brunswick
WHISTLER, OLIVE THELMA	B	Pittsfield, Mass.
WILSON, HELEN	A	Bayonne
WORTENDYKE, CAROLYN	B	Jersey City
WYCKOFF, EUGENIA VILLETTE	C	Mountain Lakes
YULE, MARJORIE BRUCE	B	Jersey City

SUMMARY

Sophomores, Class of 1922	47
Freshmen, Class of 1923	84
Total College for Women	131

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SUMMER SESSION, 1919

* Holding teacher's certificate

Abernethy, Mary Louise	East Orange
Ainscough, William	Plainfield
Albertson, Marjorie Brands	Delaware
Alden, Harriet	Metuchen
Allen, Bessie Frances	Allenwood
*Apgar, Mildred Dora	Cranford
*Applegate, Helen Marguerite	South Amboy
Argast, Carolyn	Irvington
Armstrong, John Willson	Blairstown
A.B., Rutgers College	
Aronoff, Alice Josephine	Trenton
*Ashton, Estelle Vanzandt	Trenton
*Assmus, Elsie Johanna	Nutley
Atkinson, Ethel	New Brunswick
Atkinson, Sarah	New Brunswick
*Ayres, May Bender (Mrs.)	Bradley Beach
*Bahrenburg, Elsie Dorothea	Hazlet
Baier, Mary	Elizabeth
Bailey, Hannah Godfrey	Manasquan
Bailey, Vera Walling	Keyport
Baird, Karl Oliver	Freehold
Baker, Marion Phillips	Rahway
*Bally, Thea Olga	Cranford
*Barnes, Grace Emiline	New Brunswick
*Barnes, Leigh Darling	New Brunswick
A.B., Adelphi College	
Barnes, Nettie	Delaware
Barny, Frederick Sutton	New Brunswick
*Barrett, Inez Violet	Vernon
*Barrick, Doris Elizabeth	Trenton
*Bartle, Chrissie Middleton	New Brunswick
*Bartlett, Ruth Ward	Elizabeth
Bateman, Ruth	Somerville
*Bayliss, Julia Etta Marie	New Brunswick
*Bazzel, Sarah Wilbur	Trenton
*Beck, William	Burlington
*Becker, Suzanna	Newark

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Benedict, Louisa Ogden	New Brunswick
*Benedict, Marguerite Alma	Dover
Bennington, Edith	New Brunswick
Bergen, Sara Matilda	Dutch Neck
*Bergmann, Fred William	Egg Harbor City
Betts, Philander Hammer	Montclair
Block, Anna Frances	Newton
Bodine, Mildred Ora	Roselle Park
Borden, Arthur Gilbert	Freehold
Bosquett, Daniel Aloysius Sullivan	Jersey City
*Bossert, Jane Rebecca	Morris Plains
Boudinot, Watson Henry	New Brunswick
*Bowman, Carrie Elizabeth	Elizabeth
*Boyer, Lynn Hahn	Wildwood
*Bracey, Marie Elizabeth	East Orange
*Brand, Enid Marston	Red Bank
P.B., Syracuse University	
*Brash, Samuel Richard	Metuchen
Bridenburg, Edward	Coytesville
*Brinn, Mollie	New York City
Broadhead, John Henry	Washington
Broger, Helen Christine	South River
Brown, Emma Dorothy	Florence
Brown, John Russell	Paterson
Buckingham, Mary L. Rogers (Mrs.)	Ocean Grove
*Bugbee, Rilla	Williamstown
Burkard, Charlotte Amelia	South Amboy
*Butcher, Laura Almira	Freehold
Caine, Lillian Faye	Hightstown
Cairns, Allan Allardyce	Montclair
*Campbell, Emmett, Jr.	East Newark
Campbell, Herbert Ryerson, Jr.	Paterson
*Campbell, Katharine Wade	Short Hills
Campbell, Theodore Carman	Metuchen
Cantilina, Nicholas	Paterson
Canzonier, Amelia Dorothy	New Brunswick
*Caprio, Angela Veronica	Newark
*Carman, Josephine F. (Mrs.)	Metuchen
Carrassi, Camelia	Hoboken
*Carrol, John Henry	Collingswood
Casey, Edward Leo	Bridgeport, Conn.

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*Chamberlain, Stephen	Kenvil
*Chappelle, Ruth Virginia	Hoboken
A.B., Cornell University	
*Cheron, Adrienne Leah	Newark
*Christian, Ellamay Lovett	Trenton
Clark, Marion G.	Newark
*Claxton, Josie A.	Phillipsburg
Clinton, Olive	New Brunswick
Clinton, Ruby	New Brunswick
Coddington, Hazel Allen	Plainfield
*Cole, Ada Leisenring	Elizabeth
*Cole, Alice Katharine	Elizabeth
Cole, Margaret	Three Bridges
Coleman, D. A. (Mrs.)	New Brunswick
*Coleman, Inez	Elizabeth
*Compton, Alma Gertrude	Paterson
Conger, Henry Clay, 3d.	Orange
Conklin, Miss George	Lyons Farms
*Connors, Elizabeth Gowen	New Brunswick
*Coogan, James F.	East Newark
A.B., St. Peter's College	
Cook, Mildred Florence	North Long Branch
*Coon, Anita Verna	Matawan
*Corky, Bessie Llewellyn	Manasquan
B.S., Teachers' College	
Cowie, George Howard, Jr.	Rahway
Crankshaw, Charles William, Jr.	East Orange
*Crater, Jeannette Belle	High Bridge
Croft, Percy George	Cranford
*Cronce, Georgiana	Woodbridge
Cummings, Florence Browning	Morristown
*Cunningham, Margaretha	Morris Plains
Cunnius, Alfred Ray	Jersey City
Curley, Madelyn Louise	Bayonne
*Curley, Margaret Marion	Freehold
Daly, Margaret Mansfield	New Brunswick
Davis, Elizabeth Kidder	New Brunswick
*Davis, Harriett Angeline	North Plainfield
*Davis, Helen	East Orange
*Davis, Ida Ahletta	Carteret
*DeFelice, Catherine	Cliffwood

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DeHart, Anna Elizabeth	New Brunswick
DeHart, Harriet	Hammonton
*Delaney, Nellie Clair	Jamesburg
*Deshler, Marjorie	New Brunswick
*Dey, Helen Holton (Mrs.)	Newark
*Dey, Luella Bennett	Hightstown
Dittmar, Kenneth Anton	New Brunswick
*Doyle, Bessie Catharine	Bayonne
*Drinkwater, Anna May	Whitehouse
Duff, Howard Grant	Jersey City
*Durholz, Otto Bertram	Paterson
*Eaton, Lillian Frances	Long Branch
Edelman, Eva Jane	Bath, Pa.
*Ehlen, Hilegarde Elizabeth	Millington
Eisenberg, Nathan	Norma
*Elliott, Ruth	Plainfield
A.B., Wellesley College	
Ellis, Alfred (Mrs.)	Metuchen
*Emmel, Mary Janvier	Elizabeth
*Ensign, Helen Virginia	Woodbridge
Erickson, Edward Harold	New Brunswick
*Errickson, Kathryn	Perrineville
*Estelle, Hattie C. (Mrs.)	Farmingdale
Estelle, Jennie Lee	Farmingdale
*Evanston, William Edwin	Jamesburg
Everett, Elizabeth R.	Lebanon
*Fagan, Winifred Julia	Elizabeth
Federighi, Henry	New Brunswick
*Fee, Mary Cecelia	Keasby
Fehlinger, Edna Louise	Clifton
*Ferguson, Harold Allen	New Brunswick
A.M., Clark University	
*Ferree, Mary Jeanne	Monmouth Junction
*Fink, Mildred Allan	Westfield
*Fisher, Harriet Mott	New Brunswick
Fiske, Jessie Gladys	Brookfield, Vt.
Ph.B., University of Vermont	
*Fitzherbert, Bertha	Dover
Fitzherbert, Edna May	Succasunna
Foot, Cyril Hughes	Westfield
*Forbes, Anne	Elizabeth

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*Forsythe, Marion Lawrence	Hopewell
Fox, Vernon Cartwright	Metuchen
Francis, Marie C.	New Brunswick
Franklin, Charles Edward	Perth Amboy
*Frederickson, Meta	Jersey City
*Freeman, Augusta Stockton	New Brunswick
*Frenzel, Agnes Elizabeth	Somerville
*Fritts, Hazel Elma	Milford
Fuller, Eugene Van Nostrand	Nutley
*Gaffy, Mildred Harriet	South Orange
*Gardner, Albert L.	Fords
*Garland, Kate Conover	New Brunswick
*Garland, Lillian Vida	Sea Bright
Garnar, Thomas Edward	Toms River
*Gates, Esther L.	Newark
Gaub, William Henry, Jr.	New Brunswick
*Gearhart, Mary L.	Bayonne
*Gelpke, Mary Catharine	Phillipsburg
Gerke, Henry	Westwood
Gildersleeve, Gwen	New Brunswick
*Gillespie, Minnie F.	Morristown
*Ginsberg, Victoria	Woodhaven, L.I., N.Y.
Giordano, Mildred	Jersey City
Giordano, Vincenta Aurora	Jersey City
Goldsmith, Harry Wolfe	Keyport
*Goldstein, Samuel	Elizabeth
*Goldy, Ada Z. (Mrs.)	Jobstown
Gordon, Lillian Frances	Allentown
*Grady, Helen Margaret	New Brunswick
Graham, David Park	East Orange
*Green, Edna Holley	New Brunswick
*Greenberg, Ida	Englishtown
*Greenwood, George Herman	Newark
*Griebling, Edith May (Mrs.)	Freehold
Gulick, Emily Moyer	Kingston
Gvirtsman, Helen Celia	East Millstone
Haas, Charles Jethro	New Brunswick
Haas, Charlotte Rolfe (Mrs.)	Metuchen
Hadden, William Mackinlay	Poughkeepsie, N. Y.
Hall, Mary Ellen	Hampton
Hanaway, William Lippincott	Long Branch

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Harden, Margaret	Hightstown
*Hartman, Charles Norman	Pennington
Hartshorne, Mary C.	Englishtown
*Hartung, Ethel J.	Delaware
Heartstone, Isabel	Stelton
*Heery, Mary	Newark
*Heil, Florence Belmont	Trenton
*Heiser, Oliver Raymond	Englishtown
*Henderson, Jessie Eva	South River
Henneman, Margaret	New Brunswick
*Hennessy, Julia M.	Elizabeth
Henry, George Leigh	Lebanon
Herzog, Georgine	Jersey City
*Hess, Hildegarde Katherine	Roselle Park
*Hice, Mae	Milford
Hickman, Cedric Ashley	Asbury Park
*High, Eulah Castner (Mrs.)	New Brunswick
Hildebrant, Nellie	Delaware
Hill, Dorothy Bennett	Belle Meade
Hill, Gertrude Rachel	Columbia
Hite, Maude Clemence	Fairfield, Va.
Hofer, Clarence John	Metuchen
Holland, Cecilia Gaines	Montclair
*Holthusen, Minnie Clara	West New York
*Hoolan, Irence Catherine	Highlands
*Hoover, Mary Wade (Mrs.)	Elizabeth
*Hopper, Grace Sloat (Mrs.)	East Orange
Horsford, George Sears	Montclair
*Hortsman, Josephine Catherine Gertrude	East Rutherford
Howarth, Sebastin Russell	South River
Huff, Blanche	Blairstown
Hulsart, Emily Couse	Manasquan
Hummer, Alice Elizabeth	Dunellen
Hunt, Alice Skillman (Mrs.)	Flemington
*Hurst, Mary Jane Agnes	Newark
Hutton, Frank E. (Mrs.)	New Brunswick
*Hyde, Edith Frost	New Brunswick
Hye, Marion Tindell	New Brunswick
Hynes, George Dewey	Chatham
*Ingham, John William	Philadelphia, Pa.
*Irre, Emeline Moller (Mrs.)	West Hoboken

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Ives, Cecelia Emily	New Brunswick
Jackson, Olive Evelyn	Long Branch
*Jacobson, Florence Laura	Elizabeth
Janeway, Helen Rodney	New Brunswick
Jelin, Jennie	New Brunswick
Jelin, Rose	New Brunswick
Jennings, Kenneth Quad	New Brunswick
*Jessick, Mary	Elizabeth
Jessick, Rose Margaret	Elizabeth
Joffe, Jacob Samuel	New Brunswick
B.Sc., Rutgers College	
*Johnson, Bessie MacGowan	Vineland
*Johnson, Margaret Walton	Orange
Ph.B., University of Vermont	
Johnson, Warren Russell	Kearney
Johnston, Carey William	Newark
Johnston, John Harold	Ridgewood
Jones, John Warren Joseph	New Brunswick
*Jones, M. Edna	Morristown
Jones, Rose Frances	Morristown
*Jordan, Stella	Pitman
Judd, Carita	New Brunswick
Julius, Abraham	New Brunswick
*Kantor, Ida Miriam	Newark
*Kaser, Louis J.	Mount Holly
Kaufman, Nathan	Bayonne
Keeler, Gilbert Brooks	East Orange
Kelly, Frank Benedict	New Brunswick
Kelsey, Samuel	Perth Amboy
Kendall, Elizabeth Doughty	Millville
*Kennedy, Beatrice Edna	Vineland
*Kirkpatrick, Florence Janet	Newark
*Kiser, George Herman	Morristown
Kleinhans, Elizabeth Frances	Roselle Park
*Knight, Jennie Davidson	Bayonne
Koch, Floyd Peter	Phillipsburg
*Koetz, Emma Rose	Vineland
Kofal, Florence Henrietta	Ocean Grove
B.E., National School of Elocution and Oratory, Philadelphia	
*Kovalewski, Anna Florence	Hoboken
Kovarsky, David	Freehold

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Kulp, Marguerite Fenton	New Brunswick
LaBarre, Anna M.	Phillipsburg
*Lake, Agnes Minnie	Guttenberg
*Lake, Lulu	Guttenberg
Lamscha, Richard Burton	Butler
*Lawlor, Margaret Dollores	West Hoboken
*Lawson, Thomas Lawrence	Newark
*Leadenham, Elizabeth	Elizabeth
*Lee, Linette Esther Ph.B., Dickinson College	New Brunswick
*Leed, Regina M.	New York
*Leng, Mary	Upper Montclair
Letson, Eleanor Cumberson (Mrs.)	New Brunswick
Letson, Evelyn Roberta A.B., Randolph-Macon College	Stelton
Letson, Walter Colburn	Stelton
Lettiere, Anthony	Trenton
Levine, Anna	South Branch
Lewis, Eleanor	New Brunswick
*Liddy, Anna Margaret	Hoboken
Lindemer, Dorothea	Trenton
Lindsay, George Mathieson	Belleville
*Linson, Elizabeth Louise	Atlantic Highlands
Lippincott, L. Y. (Mrs.)	Metuchen
*Livingstone, Margaret Mackay	Paterson
*Lloyd, Natalie Katharine	Elizabeth
Lockwood, Jeannette Wyckoff	New Brunswick
Loftus, Margaret Elizabeth	Farmingdale
*Long, Mildred	New Brunswick
*Loughran, Margery Belle	Paterson
*Lucas, Mary Pettit	Florence
*Luker, Minnie Clayton	Freehold
*McCarren, Sara	Jersey City
McCarthy, Margaret Cecelia	Millville
*McCarthy, Sadie	Freehold
*McDougall, Lois	Westfield
McElroy, James Maxay	Woodbridge
McFadden, Edna	New Brunswick
*McLaughlin, Elizabeth	Flanders
MacMillan, Louise	Freehold
McNulty, Carrell Stewart	Washington, D. C.

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McQuilliande, Eleanor C.	Stelton
Madaras, Anna Marie	Bayonne
Main, Hermas Victor	Perth Amboy
*Mains, Edna	Newark
Mandeville, Francis Tibbals	Boonton
Mansfield, William Henry	New Brunswick
Markle, Walter Jonathan	Jersey City
Martin, Willard	Princeton
Masker, Craig Morse	Plainfield
*Masso, Josephine	New Brunswick
Masurovsky, Benjamin	New Brunswick
Maupin, Benjamin Franklin	New Brunswick
Maupin, Helen Bennett (Mrs.)	New Brunswick
Mead, George Adriance	Upper Montclair
Melick, Edith Mary	Annandale
Merritt, Frank Pearson	Red Bank
Metlar, Katherine Pauline	New Brunswick
Miller, Charlotte Pettingill A.B., Adelphi College	Trenton
Miller, John Lloyd	Hightstown
Miller, Sadie Carpenter	Pennsville
*Mills, Arthur P.	Morristown
Miner, Ross Huylmunn	South Orange
*Mitchell, Frances	Dover
Moffatt, Virginia (Mrs.)	River Edge
Molineux, Paul Rexford	Metuchen
Molineux, Walter Lang	Metuchen
Moore, Emily Miriam	Rahway
*Moore, Florence Edith	Fort Lee
*Moran, Gertrude Cecelia	Jersey City
Morgan, Russell William	Westfield
Morris, Beatrice	Metuchen
Morrison, Ruth Maria	Sussex
*Morse, Elizabeth Augusta	Weehawken
*Mountz, Harry W. Ph.B., Ohio Northern University	Spring Lake
Mueller, Mrs. May LaForge	New Brunswick
Mulkey, Dorothy G.	Pittston, Pa.
Muller, Julius Frederick	Ridgewood
Mullin, Ruth Letitia	New Brunswick
Munroe, Grace Edna	Elizabeth

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Myers, Helen Gertrude	Newark
Nash, James J.	Plainfield
*Neale, Mamie Geraldine	Freehold
*Neuman, Melusina Louise	Elizabeth
*Norrby, Alma Elizabeth	Morristown
Nutz, Anna Emilie Elizabeth	Jersey City
Ogareck, Jeanne Frances	Newark
*Olsan, Nathaniel	Newark
Olsen, Olaf la cour	Perth Amboy
*Osborn, Henrietta Martin	Dayton
Osmun, Violet Van Atta	Washington
Otterson, Irene Chamberlain	Creamridge
Ottman, Frederick Ray	Ridgewood
*Packard, Laura Cordelia (Mrs.)	Stelton
*Park, Leta Elizabeth	Port Morris
Parsons, Roy W.	Newark
Patterson, William Augustus	Atlantic Highlands
*Person, Hazel Ann	Belvidere
*Phelps, Andrew Jackson	Elizabeth
A.B., Dartmouth College	
*Philhower, William	Califon
*Phillips, Margaret Burke	Trenton
*Piaja, Mary Theresa	Clifton
Pittenger, Minerva Caroline	Stewartsville
Plecker, Esther Mona	Elizabeth
Polhemus, Addie	New Brunswick
Polinick, Morris	Metuchen
Polensky, Ida	Perth Amboy
Polensky, John	South River
D.D.S., University of Pennsylvania	
Potter, Raymond Vincent	New Brunswick
Potts, LeRoy Suydam	Quakertown
Precheur, Edith Marion	Elizabeth
*Preston, Effa Estelle	New Brunswick
*Pringle, Adeline Helen	Jersey City
Purnell, Mildred Rose	Frackville, Pa.
Puttkamer, Albert	Plainfield
*Quinn, Ann Elizabeth	New Brunswick
Quinn, Fred	Freehold
*Rastall, Annie	New Brunswick
Raue, Olga Hermine	Aura

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Read, Hilton, Shreve	Atlantic City
Redmond, Mortimer James	Brooklyn, N. Y.
Reed, Russell Bauer	West Collingswood
Reed, Shivler Bertram	New Brunswick
*Reeves, Florence	Salem
*Reid, Lillian	Freehold
*Rekemeier, Emma	Elizabeth
*Rennick, Meta Kennedy	Morristown
Rice, Walter Henry	New Brunswick
*Richards, William Foster	Vineland
Richardson, Elizabeth Southward	New Brunswick
*Richman, Helen Baird	Malaga
*Robbins, Anna	Hightstown
Roberts, Irene Evelyn	Long Branch
Robertson, Grace Marion	Elizabeth
*Robinson, Florence Livingston	Fort Edward, N. Y.
*Robinson, Sara Hopper (Mrs.)	Caldwell
*Roche, Helen Cecelia	Arlington
*Rockwell, Edith	Weehawken
Roddy, Catherine I.	New Brunswick
*Roll, Mathilda	Roselle Park
Rosalsky, Beth Sheba	New Brunswick
*Rose, Alice Baggott (Mrs.)	Irvington
*Rosenthal, Liliene	New Brunswick
Rothfiss, Fred	Cassville
Rouse, Margaret Bernadette	Hammonton
*Rowan, Margaret Agnes	Jersey City
Rowe, Edward James	Franklin
Rudolfs, William	Wageningen, Holland
Runyon, Frances	New Brunswick
Ryder, Herbert Kenneth	Monroe, N. Y.
*Sackett, Helen	Newark
Schantz, Otto	Irvington
Schenck, Cecelia Kinney	Metuchen
*Schenck, Evelyn Graye	Brookside
Schmidt, George Fred	Bayonne
Schoonmaker, Ellis Harold	Hasbrouck Heights
Schoonmaker, Milton Jay	Hasbrouck Heights
Schneeweiss, Catherine Hardenbergh	New Brunswick
Schrauff, Henry John	Jersey City
*Schroeder, Leonora Martha	River Edge

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*Schweizer, Antoinette Margaret	Elizabeth
*Scripture, Ruth Elizabeth	Newfoundland
Sellers, Carroll Knauer	Garwood
*Shafts, Mary	Belmar
*Sharp, Vira	Bartley
*Sheets, Mildred Orellia	Lebanon
*Shepherd, Beatrice Anne	Hopewell
Short, Walter Edward	Newark
Shultz, Charles Alvan	Jamesburg
*Siemons, Eva Tracy	New Brunswick
*Siess, Marie Elizabeth	Elizabeth
Simon, Eva	Newark
Siver, Ross Ledger	New Brunswick
Skinner, Beatrice	Bound Brook
*Smith, Gretchen von Meske	New Brunswick
Smith, Margaret Russell	Bound Brook
Smith, Marian Regina	Lyons Farms
Smith, Mary Ella	Elizabeth
Smith, Myrtle Mae	Washington
*South, Theresa Hall	Salem
Spencer, Lillian Louise	North Plainfield
*Spoerl, Elmo Eugene	Metuchen
B.A., New York University	
*Sprague, Elizabeth	Philadelphia, Pa.
Sproul, John Wright	Somerville
Staats, Mildred Pearl	Belle Meade
Stadele, Florence	Westfield
*Stead, Dorothy	East Rutherford
*Stein, Floyd S.	New Brunswick
Stevens, Edward (Mrs.)	Metuchen
Stevens, Ethel Miller	Jersey City
Stokes, Emma Melvina	Freehold
*Stokes, Viola Matilda	Freehold
A.B., Barnard College	
*Stolk, Leonard	Paterson
*Stone, Charles T.	New Brunswick
A.B., Bowdoin College	
*Stratton, Anne Morlander	Vineland
Summerill, John Morris, Jr.	New Brunswick
Sutton, Anthony Vincent	New Brunswick
Sutton, John Jackson	Warsaw, N. Y.

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Sydenstricker, Grace Caroline	Washington, D. C.
Symmes, Marion	Freehold
Tarko, Sallie Jean	New Brunswick
*Tatton, Joseph	Perth Amboy
*Taylor, Bertha V.	Pleasantville
*Taylor, Louise Howell	Westfield
Terhune, Alfred McKinley	Newark
*Terhune, Margaret	New Brunswick
Terwilliger, Carolyn Louise	Oak Ridge
*Thistle, L. May	New Brunswick
Thomas, Raymond John	New Brunswick
*Thomas, Ruth	Bound Brook
Thompson, Clara Walker	Elizabeth
*Thompson, Leila	Freehold
Thompson, Merrill Hazelton	Metuchen
*Thornton, Ernestine Rebecca	Roselle Park
*Tilton, Harold Hoyt	Elizabeth
A.B., Harvard University	
Todd, Charles Toms	Dunellen
*Towne, Lillian Ida	Jersey City
*Townsend, Florence Wahlquist	Hackensack
*Tully, Eva Mary	New York, N. Y.
B. of S., New York University	
Tyrrell, Katherine Cecelia	Trenton
*Van Alen, Katharine B.	Newark
Van Alstine, Adah Miriam (Mrs.)	New Brunswick
Van Alstine, Ernest	New Brunswick
M.S., University of Illinois	
*Van Arsdale, Estelle	South River
Van Arsdale, John Royle	Hawthorne
Van Auken, Alice Emma	Branchville
*Van DeVenter, Elva Faye	New Brunswick
Van Dyck, Pierre	New Brunswick
A.B., Rutgers College	
*Van Gelder, Ruth Eleanor	Long Branch
*Van Hise, Esther Hagaman (Mrs.)	Cassville
Van Mater, Joseph Appleton, Jr.	Plainfield
Van Nest, Maude Elizabeth	South Branch
*Van Nuis, Irene Elizabeth	New Brunswick
Van Orden, Ralph P. S.	Ridgewood
*Vigne, Adele	Keyport

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von Glahn, Irma Henrietta B.A., Barnard College	Red Bank
Voorhees, Anson Willard	Upper Montclair
*Voorhees, Estelle D.	Red Bank
*Voorhees, Grace Darling	Farmingdale
Waelde, Esther Amelia	New Brunswick
*Waller, Margaret Elmer	Freehold
Ward, Anton	Hackensack
*Wardell, Harriett	Metuchen
*Watson, Mary Jane	South Amboy
Weiss, Viola Murdock	New Brunswick
Weldon, Helen Rodgers	Somerville
Weyrauch, Herman	Elizabeth
Whitford, Dora Elizabeth	Dunellen
Williams, Amy Marjory Lillian	Cedar Grove
Wilson, Minnie	Newark
*Winans, Seymour Gladstone	Englishtown
Winkler, Ernest Otto	New Brunswick
Winkler, Freda	Irvington
Woltmann, Julia Elizabeth	Millington
Wood, Nellie Bush	Jersey City
*Worle, Helen Smith	New Brunswick
Wray, Annie	New Brunswick
*Wray, Permelia	New Brunswick
Yarnall, Emma Irene Sc.B., Bucknell University	Lewisburg, Pa.
Yule, Jessie Louise	Jersey City
*Ziemba, Mary	Carteret
*Zimmerman, Marie Elizabeth	New Brunswick
Zipper, Margaret Miriam	Elizabeth

Total in Summer Session..... 532

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SHORT COURSES IN AGRICULTURE

Students 1919-1920

G = Course in General Agriculture and Dairy Farming
F = Course in Fruit Growing and Market Gardening
P = Course in Poultry Husbandry

Abbott, George Scattergood	G	*Salem*	132 George St.
Adam, Ludwig Eugen	P	*New Brunswick*	83 Commercial Ave.
Akahoski, Kisuke	G	*Tokio, Japan*	237 Grant Ave.
Allen, Joseph Thomas	F	*Manasquan*	16 Townsend St.
Appeldorn, Charles	G	*New York City*	55 Comstock St.
Baird, Clifford Percy	G	*Bound Brook*	Bound Brook
Baker, Donald Wyckoff	G	*Hammonton*	152 Somerset St.
Baker, Lloyd Hendric	G	*Cresco, Pa.*	94 Bayard St.
Barr, Marie Mertown (Mrs.)	F	*New Brunswick*	26 Baldwin St.
Barse, Horace Edward	G	*North Bergen*	91 Easton Ave.
Barton, Ruby Pearl	G	*South Orange*	133 Jones Ave.
Bell, Stanley Livingston	G	*Newton*	52 Oliver St.
Berry, Merrill Robert	G	*Newark*	Newark
Bonney, Joseph Lefferts	G	*New Brunswick*	49 Nichol Ave.
Bouineau, Gustavo	G	*New York City*	270 Suydam St.
Brick, Henry Russell	G	*Medford*	83 Commercial Ave.
Broderson, Arthur Frederick	G	*Shrewsbury*	32 Hardenburg St.
Brooks, Louis	G	*Upper Montclair*	Farm House
Broome, Raymond Leslie	G	*Jersey City*	176 George St.
Brown, Walter Middleton B.S., Lafayette College	G	*Lakewood*	51 Remsen Ave.
Butcher, Joseph Howard	F	*Camden*	124 Codwise Ave.
Campbell, Lewis Graham	G	*Cranbury*	162 Jones Ave.
Cane, Charles Henry	P	*Lambertville*	172 Commercial Ave.
Chatten, Laurie Remson	G	*Mountainside*	Ryders Lane
Cook, Margaret Cooper B.S., Smith College	G	*Troy, N. Y.*	Bleecker Place
Copperthwaite, William	P	*New Brunswick*	R. F. D. No. 19
Cotter, Joseph Raymond	P	*West Hoboken*	16 Townsend St.
Dassori, Anthony	G	*New Brunswick*	R. F. D. No. 4
Davies, Frank Joseph John	P	*Swarthmore, Pa.*	113 Throop Ave.
Davis, Charles Toy	F	*Woodstown*	172 Commercial Ave.
Davis, Frederic	P	*Nutley*	31 Handy St.

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Davis, Lawrence Johnson	G	*East Orange*	83 Commercial Ave.
Degen, August	P	*Brooklyn, N. Y.*	193 George St.
Donnelly, Frank Daniel	P	*New York City*	112 Redmond St.
Douglass, Stanley Lewis	G	*Port Murray*	11 Codwise Ave.
Downs, Orville	G	*Clayton*	Ryders Lane
Dunn, William Joseph	P	*Philadelphia, Pa.*	16 Townsend St.
Einstein, Hyman	P	*Brooklyn, N. Y.*,	288 Redmond St.
Ellis, Sedric Elmer	G	*Morsemere*	195 George St.
English, Claude	G	*Newfield*	307 George St.
Ent, Lambert	P	*Trenton*	49 Neilson St.
Ernhout, Stephen Henry	P	*Ellenville, N. Y.*	108 Redmond St.
Fehl, Herman August	P	*Newark*	Newark
Fine, Meyer	P	*Trenton*	Trenton
Fingar, Allen Howard	G	*Lambertville*	133 Jones Ave.
Galpen, William Duke	P	*Hammonton*	205 Redmond St.
Garrison, Walter Edwin	G	*Roadstown*	205 Redmond St.
Gauntt, Fred	G	*Jobstown*	87 Commercial Ave.
Geist, John H.	G	*Newark*	Newark
Goodman, Louis	P	*New York, N. Y.*	255 George St.
Gossiaux, Francis Rene	G	*Bridgeton*	67 Remsen Ave.
Gower, Harry Martin Leveson	G	*Rouses Point*	138 George St.
Gravenhorst, Edward Henry	P	*Newark*	28 Handy St.
Gray, Charles Darwent	F	*Morgan City, La.*,	26 Redmond St.
Griscom, David Davis	F	*Marlton*	172 Commercial Ave.
Gulick, Clarence	G	*Whitehouse*	172 Commercial Ave.
Hall, Madeline M.	P	*Trenton*	Trenton
Halliday, James Robertson	G	*Kingston, N. Y.*	35 Redmond St.
Hallman, George Wescott	G	*Atlantic City*	171 George St.
Hawk, Paul	G	*Philipsburg*	132 George St.
Hayes, Walter Lane	G	*Vineland*	140 George St.
Heath, Clifford John	G	*Morsemere*	195 George St.
Heck, Peter Joseph	F	*Hammonton*	26 Handy St.
Herzog, Alfred Christopher	G	*Jersey City*	Jersey City
Hillyer, Harold Wilber	G	*Middletown*	16 Codwise Ave.
Hoagland, Lewis Perry	G	*Woodbridge*	176 George St.
Horvath, Elisabeth Anna	F	*Annandale*	133 Jones Ave.
Johnston, John Thomas	G	*Cato, N. Y.*	152 Somerset St.
Jones, Elmer Raub	G	*Vail*	87 Commercial Ave.
Kandel, Benjamin	P	*New York City*	55 Suydam St.
Ketcham, Thomas	G	*Farmingdale*	224 Suydam St.
Kirchner, Jacob George	P	*Nutley*	Nutley

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Koppel, Mickel	P	*Philadelphia, Pa.*	127 Bayard St.
Korotkin, Andrew Frederick	G	*Swedesboro*	168 George St.
Kramer, Theodore John	G	*Jersey City*	133 Jones Ave.
Kugel, Benjamin	P	*Newark*	Newark
Kursh, Laura May (Mrs.)	G	*Orange*	The Bayard
Lambert, Charles Albert	G	*Camden*	124 Codwise Ave.
Laughlin, Arthur Crawford	G	*Whitehouse Station*	195 George St.
Lippincott, Albert Harvey	F	*Marlton*	172 Commercial Ave.
Loeser, Paul George	G	*New York City*	New York, N. Y.
Lynch, Milton Ellsworth	P	*Ridgewood*	133 Jones Ave.
McCormack, James Christopher	G	*New Brunswick*	148 Codwise Ave.
McPherson, Donald	P	*Plainfield*	Plainfield
Mairs, Albert James	P	*Dumont*	Ryders Lane
Mairs, Robert Charles	G	*Dumont*	Ryders Lane
Maple, Carl Lewis	F	*Princeton*	28 Handy St.
Marshall, William Thomas	G	*Belleville*	87 Commercial Ave.
Metcalfe, Calvin Willard	P	*East Orange*	East Orange
Midzuno, Motsutaro	G	*Franklin Park*	Franklin Park
Mikich, Milan	F	*Columbus*	422 George St.
Miller, Douglas	P	*Glen Ridge*	Glen Ridge
A.B., Yale University			
Moore, Charles Lloyd	G	*Perth Amboy*	Perth Amboy
Morgan, Thomas Montagu	F	*Cedar Grove*	Farm House
Morrell, Edwin Bills	G	*Pennington*	83 Commercial Ave.
Mullin, Eugene Francis	G	*Far Hills*	168 George St.
Neal, Franklin Hewett	F	*Millville*	211 Commercial Ave.
Nechomovsky, Berka	P	*New York, N. Y.*	16 Townsend St.
Nichols, Bernard Windsor	G	*Newark*	Newark
Norton, Dennis Aaron	G	*Walton, N. Y.*	246 George St.
Opdyke, Claude Heft	G	*Bound Brook*	Bound Brook
Packard, Arthur	G	*Stelton*	Stelton
Palmer, Fredrick Emil	P	*Woodcliff-on-Hudson*	56 Comstock St.
Parker, John Stanley	G	*Little Silver*	140 George St.
Parsons, John G.	P	*New Brunswick*	229 Talmadge St.
Paul, Harry Dixon	G	*Ridgefield Park*	Ryders Lane
Perry, Edward Jones	F	*Paterson*	186 George St.
Porch, Samuel Eastlack	F	*Richwood*	67 Remsen Ave.
Propst, Henry Earl	G	*Archbald, Pa.*	246 George St.
Race, Carl Spangenburg	G	*Oxford*	Ryders Lane

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Reese, Edwin William, Jr.	P	*Haselton, Pa.*	Room 401, Y. M. C. A.
Reis, Isaac Wolff	F	*Vineland*	52 Oliver St.
Richardson, Robert Stewart	G	*Montclair*	Ryders Lane
Rittenhouse, Edwin Stanley	G	*Stockton*	College Farm
Rittenhouse, Warren Fleming	P	*Stockton*	202 Handy St.
Robinson, Katharine Parkhurst (Mrs.)	F	*Cranford*	Cranford
Ryan, Thomas	P	*Philadelphia, Pa.*	16 S. Townsend St.
Sala, Clara Marguerite	G	*Newark*	113 Throop Ave.
Saltsberg, Israel	P	*Little Falls*	146 Draft St.
Schanck, Kortenus	G	*Adelphia*	193 George St.
Schantz, Julius Jacob	P	*Irvington*	Irvington
Seiler, Carl T.	F	*Riverside*	32 Redmond St.
Sherwood, Isaac	G	*Lamington*	172 Commercial Ave.
Shivers, Frank Remer	G	*Merchantville*	52 Oliver St.
Smith, Edward Tiel B.Sc., Rutgers College	F	*Magnolia*	College Farm House
Smith, Lawrence James	F	*South River*	South River
Smith, Raymond Slack B.S., Massachusetts Institute of Technology	G	*Freehold*	212 George St.
Smith, Wilson Jacobus	G	*Newton*	Ryders Lane
Spinks, Russell Dudley	G	*Jersey City*	Jersey City
Springer, Harry Irving	G	*Englewood*	44 Remsen Ave.
Sproul, Charles Stout	G	*Keyport*	52 Oliver St.
Squires, Walter Edward	P	*Elizabeth*	312 Montgomery Ave.
Stager, Arthur Floyd	G	*Nutley*	18 College Ave.
Stern, Michael	G	*New Brunswick*	44 Remsen Ave.
Strotz, Adolf William	G	*Newark*	Newark
Suhr, Anton Gordon	G	*Far Hills*	168 George St.
Swenson, Nils Bernard	G	*Hackettstown.*	211 Commercial Ave.
Thompson, Mary Wolfe (Mrs.)	F	*Flanders*	20 Livingston Ave.
Thomson, Hugh Eversfield	F	*Summit*	204 Handy St.
Torbet, Walter Vernon	G	*Preakness*	28 Handy St.
Trudel, Alfred	P	*Rahway*	Rahway
Turner, Ernest Alfred	G	*Rumson*	13 Throop Ave.
Uhland, Edwin Frances	G	*Bridgeton*	208 Commercial Ave.
Van Dyke, Harold Henry	F	*New Providence*	168 George St.
Vennel, Samuel Haines	G	*Marlton*	Ryders Lane
von der Linden, Emily (Mrs.)	P	*West Hoboken*	45 Baldwin St.

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Vreeland, J. Pierson	G	*Vineland*	81 Commercial Ave.
Walrath, Edgar Kinney	G	*New Brunswick*	Ryders Lane
Whitney, Vida Bertha	F	*Plainfield*	Plainfield
Willgerodt, Harold	P	*Montclair*	31 Handy St.
Woolley, Anthony Parker	G	*Asbury Park*	26 Baldwin St.
Wriggins, Parker Turner	F	*Trenton*	Trenton
Wright, Leopold	P	*Brooklyn, N. Y.*	193 George St.
Yeomans, Socrates Tuttle	G	*Ridgewood*	113 Throop Ave.

Total Short Courses in Agriculture..... 154

Summary 1919-1920

Graduate Students	18
Undergraduates	614
Special Students	9
College for Women	131
Summer Session	532
Short Courses in Agriculture	154
	1,458
Names counted twice	72
Total student attendance	1,386

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ASSOCIATIONS OF THE ALUMNI

THE ASSOCIATION OF THE ALUMNI OF RUTGERS COLLEGE

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Secretary—Earl Reed Silvers '13

Treasurer—Henry P. Schneeweiss '77

Biographer—John H. Raven '91

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Assistant Inspectors—Edward F. Johnson '01
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Vice-Chairman—Franklin A. Pattison '87
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Charles Deshler '85
Lewis B. Chamberlain '86
Franklin A. Pattison '87
John H. Raven '91
Philip M. Brett '92
Francis B. Sanford '93
Vreeland Tompkins '93
John V. N. Dorr '94
Robert B. Littell '95
J. Provost Stout '95
Charles M. Mason '97
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George A. Osborn '97 — John W. Mettler '99
Carl R. Woodward '14

Committee on Class Reunions and Organizations

Chairman—John H. Raven '91

Edward C. Pearson '68 — Frank L. Manning '96
La Rue Vredenburgh '76 — R. Bovey Searle '16
Royal F. Nichols '18

LOCAL ASSOCIATIONS OF THE ALUMNI

Local associations and clubs of the alumni are maintained in New York City, Philadelphia, Chicago, Newark, New Brunswick, Bergen County, Hartford, Conn., St. Louis, Mo., and Southern California. After the annual elections the lists of officers will be published in the *Alumni Quarterly*.

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